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THE AUTOMOBILE

Comfort in Winter Driving

Zero weather has no terrors en tour for the lady equipped like this

SPECIAL clothing to make possible the full enjoyment of automobiling costs in the neighborhood of $50 a year for each individual motorist. Outfits of a certain character can be had for less and they may cost almost any amount more, but the average expenditure is about the figure cited.

If there are 450,000 pleasure automobiles in operation in the United States, and if there are three persons associated with each car, the aggregate cost of clothing per annum for automobiling would reach the astonishing total of $18,000,000.

In Winter, and in fact in both Spring and Autumn, comfortably warm clothing is almost as essential to automobiling as the car itself. Nothing could be more disagreeable than a long ride on a cold day where the lack of warm clothing makes itself apparent in chilled bodies and shivering nerves. On the other hand, a ride even over frozen roads and against a nipping wind is a magnificent pleasure if proper preparations for it have been made in the way of clothing.

Some of the characteristic lines of clothing that are being shown this season include the following: Caps, hoods, bonnets, polo-coats, fur coats, leather-lined fur coats, cloth coats, waterproofs, slip-overs, ponchos, gaberdines, spring pants, scarfs, gloves, muffs for hands and feet, boots, robes, puttees and leggings.

Taking these in the order given, the line of caps shown this season is limited to three types of cloth caps and two types of fur caps. Perhaps the most popular of these is what is known as the double-snap tourist. It is made in a variety of materials, silk-lined, and its distinguishing feature is in the ear-tabs which are fastened on top of the cap when it is not being used on a very cold day. The tabs look like a part of the crown except when they are in use, but when they are in action they pull down to the collar and fasten under the chin, thus making a very warm, compact bit of headgear.

The English golf cap is also exceedingly popular and differs from the double-snap cap in that it has no ear-tabs. The ears are protected by a strip of cloth that may be pulled down from a telescoped position outside the body of the cap. A variation of the golf cap is the English automobile cap. This is made on the same lines, but the part that pulls down over the ears when

The Shetland wool muffler often proves a real comforter

Knitted hoods like this add piquancy to beauty in the car

required is made either of cloth or fur. In cost the golf caps are about the same as the tourists.

For those who wish something different there are high band tourist caps and gentlemen's driving hats. The first of these is not new this season and the second is a peculiarly rakish appearing hat, with the back of the rim flattened against the crown and the peak extended and pulled down over the eyes. These hats sell for from $2.50 to $3.

In the line of fur caps there are two chief styles. The first is known as the Detroit and consists of a round crown, fitting snugly against the head. The rim is divided to form a peak that can be pulled down over the forehead and the rest of the rim can be turned down to form a warm comfortable protection for the neck and ears. These caps are made in all kinds of fur, and one variation may be noted in the fact that patent leather peaks may be had in place of the skin.

The other type of fur cap is the Alexis, a brimless, fedora shape such as is popular in Russia. The Alexis has an adjustable band that may be pulled down to ward off inclement weather. Persian lamb is the favorite material for this style. Fur caps may be had at any price between $2.50 and $30, the material ranging all the way from dog to sealskin.

When Miladi goes a-touring and the attack of Jack Frost is sharp and insistent there are many items in the grand total of automobile clothing that are in demand. Knitted hoods, varying all the way from the dainty little head covers something like those her Grandmamma used to manufacture while the dancing light from the open fire glinted from the moving needles, to the ultra-modern aviation hood that is the final word in this line, have been prepared for her comfort. Both hoods and aviation caps are made in a wealth of color, ranging from demure gray with white lace and a ruffle over her eyes to the gaily fashioned and tufted contraption that she affects when taking a short biplane ride or its equivalent in the automobile. An improvement over last year is the silk lining to keep out the wind. She can pay from $1.50 to $5 for these styles and look bewitching in either.

In the line of bonnets the field is wide. There is one confection now being displayed that will undoubtedly have a considerable vogue this season. This is a little flat, close-fitting bonnet classified as a poke. It is made of strengthened silk or taffeta and has its veil attached. The most striking example is the one shown in coronation purple. This color, by the way, is exceedingly popular and will be used extensively during the Winter. There are also poke bonnets made up in black that look just enough like widow's bonnets to be fascinating and yet carry some little dash of color to show that they are not sure-enough mourning. These cost from $5 to $15.

Fur caps in several styles will be used extensively, the Beauty being a leader. This is a round type of cap with peak and sides that turn up or down according to the desire of the wearer. They sell from $8 to $25, and are made of every conceivable kind of fur. The beaver skin makes a striking cap of this variety.

The most popular style of coat for men and women this season is made either of fur or cloth with combination collar. When the combination is off the best coat looks like any other full cut overcoat with rolling collar and revers, but when it is desired to use the combination the wearer may button the left lapel under the right side of the collar. Then by turning up an inch of the back of the collar and catching the opening together with a heavy hook and eye, the coat gives the impression of one of those trim, smooth military affairs. They come in all sorts of materials and in the polo-coat type range from $18 to $50 in price.

Furs costing from $50 to $1000, the latter being for very choice specimens of rich skins and the former representing a good

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How the back turns down to keep off cold winds from the neck

general average price, will be seen very generally. These are made of wallaby, coon, calf, dog, Japanese cat, civet, leopard, marmot, muskrat, beaver and a dozen other varieties.

All the coats made of fur and most of those constructed of cloth and designed for use in exposed parts of the car are fitted with wrist windshields. These are in effect woolen wristlets fastened into each sleeve so that when the wearer slips into the coat his hands will pass through the wristlets, and no matter how sharply the wind may blow his arms will not become chilled.

Last year a line of coats was displayed with a permanent leather lining throughout. The leather was of flexible texture and proved to be advantageous in very cold weather. This year a slight modification of this style has been made. The leather lining is made entirely separate from the coat itself, and is designed so that it may be worn with any kind of outer garment. In effect it is a close-fitting garment of leather that may be slipped on in excessively cold weather and left off in moderate temperature.

Such leather garments as described can be had at $35. They may be used with either cloth or fur overcoats.

In the line of waterproofs too much emphasis cannot be given. A waterproof garment of some kind is absolutely necessary to automobiling in variable weather, even if it is only a slicker or an oilskin. The slip-over type of raincoat has been popular for several years. This garment is made of pure rubber and is light and easily carried. As its name suggests, it slips over the head and laces up at the neck. It covers the whole body. It costs around $5. The poncho type is newer. It is made of heavily rubberized cloth, and the neck is fitted with a yoke of pure rubber that fits snugly after it is drawn on over the head. The poncho type sells for $7.50 to $10. There are also rubberized coats that cost $15 up and look almost like an ordinary overcoat, and there are lines of cravenettes of various styles and types that are familiar. In fact, all the overcoats made especially for automobilists are cravenetted to keep out wind and rain. The English gaberdine coat, with military collar made with a velvet band, is a trim-looking, comfortable garment.

Two views of the popular and serviceable type of cap for automobile wear. The protective flap can be pulled down in a moment

One of the unique features of the season is a device called spring pants, just plain pants. In the final analysis they consist of five steel springs, made in circular shape but open at one side. The top spring is larger than the others and is designed to open and snap close around the waist. The two medium-sized springs perform the same service about the knees and the little ones grasp the ankles. Draped from the big spring to the little ones is a covering of waterproof cloth. When the driver adjusts the spring pants he snaps the waist spring around his body and the knee and ankle springs around his legs, covering himself with an impermeable layer of waterproof which will defy the elements. The spring pants are made not only in plain waterproof cloth, but also in all kinds of fur. In their simplest form they cost $5 a pair, and they may run up to $100, depending on the kind of fur desired.

Even the little details of comfort are provided for to-day and one finds a complete line of soft, woolen scarfs for the neck. These cost from $2 to $4.50, and the best examples shown are made of Shetland wool imported for the purpose.

It has been said that if the hands and feet are warm, the whole body will be comfortable, and so the provision for gloves and boots in going on a trip in cold weather is among the most important.

Gloves for use in the car ought to be warm and the prevailing styles offered to the public are fleece-lined or fur-lined. For the driver they are gauntleted and lined, and for the lady passenger they are daintily shaped as a dress glove. They are made of every kind of glove fabric and leather, and cost from $2.50 to $25 a pair. There is no difference between the prevailing styles of automobile gloves and those

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The slip-on cover is a Godsend in the rain

that have been perfectly familiar to the outdoor winter public for years, except that the automobile gloves are warmer and more flexible.

Ordinary shoes are generally used in the car both Summer and Winter, and much discomfort is experienced thereby. Of course they will still do if proper precautions have been made to protect the feet with robes or muffs or something of that sort. But if one wants solid comfort in the coldest weather, fleece-lined boots will prove a revelation. These are made of pliable leather and are either 6, 8 or 10 inches high, opening on the side and fastening with straps. These answer the question perfectly and cost from $8 to $13.50 a pair. They are also made in hip sizes for $25.

One might ask why a lady possessing a fine muff should need special equipment of that sort for automobiling. The answer is: bad weather. A Russian sable muff probably would keep her hands warm, but she would have to be a stoic indeed if she could enjoy a trip through the rain in which the valuable muff was deluged with water. To fill this gap the purveyors to automobile comfort have prepared a leather-covered, fleece and down-lined muff that will defy the elements that sells for $8 and $10. In the line of foot protection there is the foot muff, made to lie on the floor of the car and large enough to contain a pair of feet. They are made of dog or coon skin and are said to be quite durable and very comfortable. They cost from $5 to $8.50.

Robes are not strictly clothing, but nevertheless they are important on an automobile trip. Fur robes of very high price are not so popular as they have been in the past. It has been found that the percentage of loss by thievery in the matter of fur robes is unduly large, and therefore the automobile owners are hesitating about equipping their cars with such expensive portable stuff. In the place of the magnificent fur robes that are still to be seen in appreciable number the automobilists are turning to the cloth robe interlined with pure rubber. These only cost from $10 to $17.50 and serve every purpose of the more costly robes. They are slashed to allow the hands to be pushed inside, and some of them are made to serve as foot muffs as well as protection for the legs and lap.

Puttees and leggins are not quite so lively this year as they have been in the past. The yellow leather puttee has practically passed away as a factor in the automobile clothing field, and in its place has come the black leather puttee. These are made either of domestic leather or English pigskin and cost from $5 to $10 a pair. The proper caper nowadays seems to be for the automobilist to wear golf stockings and low shoes.

An extensive line of veilings is shown for the ladies. The leader of the line is a washable, dust-proof fabric of exceeding lightness. The veils come in all sorts of colors and fabrics.

Another important garment for automobiling in cold weather is the sweater. Specially woven garments of this description sell for $8.50 up. Mica hoods are still considered good by those who know. These hoods are made of crêpe de chine or China silk and cover the whole head and shoulders. A plate of mica is inserted in an opening in the fabric so as to allow the wearer to see.

Regular suits, cravenetted for automobiling, but in other respects like ordinary clothing, cost from $17.50 to $50.

No special underwear and stockings are needed in automobiling if proper outer garments are prepared.

The man who essays to drive in his business suit, costing, say, $60, will probably pay more for his automobile clothing in the course of a year than the man who has special clothing for the purpose. Just a little lubricating oil will put a good suit of clothes out of commission, and a brake lever has been known to destroy a $40 coat in the twinkling of an eye. Hinges on the doors of the car are frequently destructive of good clothing.

The man who spends $50 a year to be comfortable in his car through the medium of automobile clothing will probably have more money at the end of five years than the owner who economizes in this

The driver in wide cut gaberdine for moderate weather

Leather linings suitable for any kind of overcoat

Cold will have only a good effect upon the driver so equipped

respect and spoils his regular clothes. It is absolutely certain that he will have more comfort during the five years.

A typical man's outfit for automobiling might include the following items: Cap, $2.50; coat, $50; slip-on, $6; gloves, $7.50; suit of clothes, $40; boots, $8. Total, $114. By making renewals when needed the average cost per year for this outfit need not exceed $50.

But he will have to dig a little deeper in outfitting Miladi. Something as follows: Bonnet, $15; cap, $3.50; hat, $7.50; coat, $50; raincoat, $12; gloves, $6; muff, $8; foot-muff, $5. Total, $107.

Of course he may wish to do the thing economically, and then it is possible to cut down several of the items so as to bring the initial cost to about $85.

On the other hand, if comfort is the object and money is not, the outfit may run up to $1000 or more with great facility. To illustrate this phase of the situation it may be related that several outfits purchased this Fall in New York have totaled $2000 each and did not seem to be particularly elaborate at that. On the other hand, a very simple, comfortable outfit is within the financial limits of every man who owns an automobile.

Parsimony as far as special clothing is concerned means waste as applied to ordinary clothing and certainly spells discomfort and dissatisfaction. Reasonable expenditure, on the other hand, means economy on general lines, and the pleasure that will be the result will add greatly to the enjoyment of the automobile all the year around.

While the weather so far this Fall has not been particularly severe, the advantages of wearing adequate clothing while touring was never better exemplified than during the recent Glidden Tour. Out of the 273 persons who started from New York on the long grind to Florida there was not one who had not made some special provision in the way of clothing.

There were new and natty outfits containing the latest ideas in clothing and there were makeshifts of every sort and description. There were also combinations of the latest things with old, and from every viewpoint the clothing equipment of the passengers on the tour was interesting.

This driver would do well to put on a sou'wester

Rubber coat laced at neck and protected at wrists

The new overcoats are astonishingly comfortable

Ready for a ride in any kind of weather

In large measure the professional element was well equipped. The factory drivers and crews, first of all, had adequate waterproofs. These included sou'westers of rubber, slip-ons of heavy rubber and flexible boots. The sleeves of the rubber shirts were protected with wind and weather shields and their gloves were not only waterproof, but so arranged at the sleeves that the pelting rain had no chance to find entrance to their skin.

It was found that goggles were useless in the heavy rain storms met with in Virginia and Florida and chances had to be taken in following other cars. Quite a lot of mud and gravel was flung in the faces of the tourists while speeding in the rain and there seems to be no way to obviate this difficulty except the perfectly obvious one of not driving in weather that is so bad as to eliminate all kinds of pleasure and satisfaction in traveling.

In the amateur section of the tour there was a wide difference in equipment to be observed. A number of the gentlemen drivers wore ordinary business clothing throughout. It is safe to say that all such ruined at least one suit of clothes. One Florida owner who took part said at Jacksonville that he had spoiled three suits, one of which was rendered shapeless after reaching Roanoke, another was covered with grease and oil when it became necessary for him to tighten several bolts in the base of his engine, and the third succumbed to the drenching rain within the limits of his home city. He had a heavy rubber coat, but no boots, and, as a result, he had wet feet for 3 days and caught a severe cold.

On the other hand, there were eight contestants in the amateur section of the tour who bought complete outfits of special clothing before leaving New York. These experienced a fine trip, despite its drawbacks. They had caps for dry weather, furs for cold weather, slickers and sou'west-

ers for wet weather, boots and also provided themselves with several pairs of gloves.

The tour demonstrated the need of a supply of gloves about as well as it did any one single item. It proved that heavy buckskin gloves worn in wet weather would be of no use for a week afterward, if at all, and that the ordinary type of walking glove would last about two hours if its owner attempted to handle the wheel of a heavy car in slippery going after it had been rained upon. Good gloves of the thoroughly waterproof type were demonstrated to be of the highest importance to the man who wants to drive in the rain.

As has been intimated, the lack of some one essential part of the clothing equipment will bring about an extraordinary amount of discomfort. Take the case of the man who forgot to buy waterproof foot covering and leg covering and remembered everything else. He was quite as miserable after facing a driving rain for 1 hour as was the fellow whose rain-hood leaked at the neck. It was found that water running down one's back was not a whit more uncomfortable than water running into one's shoes.

Gloves and boots seem much more important if you are not well supplied with them and happen to be caught in rainy or cold weather

The ladies of the party, numbering twenty-seven all told, were protected in a large measure by the tops of their cars, but there were several who rode the entire distance without such protection and they showed an astonishing amount of care in selecting their outfits. Miss Marks, who drove the Columbia all the way to Jacksonville, had an equipment that was peculiarly suitable for the occasion. For dry weather she wore a leather bound cap of jaunty effect and in wet weather she donned a sou'wester that reached clear to her shoulders all around. She had two raincoats, one a light slip-on and the other a heavy slicker, and for dry weather she wore one of the new polo coats that are so much in vogue. She had boots that would defy any rain, reaching nearly to her knees, and ordinary stout shoes for ordinary driving. Her rain gloves fitted inside the sleeves of her slicker and rested against the windshield.

It is notable and a fact that her Columbia car made every control within the time limit and that she seemed to enjoy every foot of the journey.

There were several of the ladies who made no special preparation for the tour except for raincoats and veils. They had a trying trip from every viewpoint. For sheer gameness the exhibition of these ladies was remarkable. Arriving at Roanoke after a wild ride through the Blue Ridge and across numerous fords that looked like swirling rivers, they were mostly wet to the skin when their cars drew up in front of the hotel. They were stiff from holding cramped positions to avoid the rain and cold and miserable as possible. But within an hour each appeared in the lobby attired in evening costume, apparently none the worse for the wreck of clothes and the discomfort of the rainy ride.

The evening costumes were less in evidence the next night, and by the time the party reached Atlanta there was not a presentable evening dress in the whole tour.

If these ladies had taken the pains to secure touring equipment that would serve in all kinds of weather and had paid less attention to the dress of the ball-room, they would have enjoyed the trip much more. Only a certain amount of luggage can be carried in an automobile in any event, and experience proves that it should first be devoted to carrying the prime essentials to comfort. Then if there is any spare space and carrying capacity in the car it may be used for the decorative effects in dress.

Of course the Glidden Tour does not fairly represent automobile touring conditions. It was one of those things that go to prove that it is the exceptional events that have to be provided for. And in nothing does it better emphasize this particular angle than in the matter of clothing.

It would be comparatively simple to overdo the special clothing equipment for automobiling and the use of considerable judgment is required in selecting just what is needed. Too much clothing is not as bad as too little, but it presents certain inconveniences that it would be well to eliminate. Besides costing much unnecessary money,

The woolen cap that pulls down over ears and neck and is equipped with a peak is absoluted necessary unless one has furs

Fleece-lined boots, strapping snugly around the leg and gauntleted mittens so constructed as to allow the fingers play are two things that deserve attention

each additional pound carried in the car causes extra wear on tires and mechanism, and as clothing is light and bulky a few unnecessary pounds make their presence distinctly felt on a long trip.

An unopened suit case on a long automobile trip is an economic outrage in which the owner of the car, driver and passengers are all aggrieved parties and in which its owner can take no pride or satisfaction.

Therefore, as unneeded garments are a disadvantage, care should be used before the start to select only such clothing and accessories as stand a good chance of being used.

The photographs from which the illustrations for this article were made were taken by THE AUTOMOBILE staff photographer from stock loaned for the purpose by The Automobile Supply Company.

Quakers Lost Money on Fairmount

PHILADELPHIA, Oct. 30—Fred C. Dunlap, chairman of the Contest Committee of the Quaker City Motor Club, to-day submitted to Mayor Reyburn a report of the receipts and expenditures of the Fairmount Park 200-mile road race held on Monday, October 9. The statement shows that a smaller sum than usual will be turned over to the beneficiaries—in this instance the Police Pension Fund and the Fairmount Park Guard Pension Fund.

The total sum realized above expenses amounts to $3036.57, of which the first-named fund will receive $1518.29 and the Park Guards $1518.28, the money being equally divided. Originally it was the intention to include a third charity, the Children's Playground Committee to share in the general distribution of the profits, but that organization was eliminated by reason of the disappointingly small amount left after all expenses had been paid.

In detail the statement shows receipts, which embraced the sums realized from the sale of grandstand seats and parking spaces, of $8527, from which expenditures amounting to $5490.43 were deducted, leaving a profit of $3037.57 for the charity fund. The expenses incurred were larger than they ordinarily would have been by reason of the fact that the account contained an item of $1395.64 for repairing the roads in Fairmount Park, an expense that heretofore has been assumed by the municipality, but which this year devolved upon the Quaker City Motor Club to pay out of the money to be donated to charity.

The Q. C. M. C. came out of the race on the wrong side of the ledger. The actual expenses of the contest amounted to $9422.37. The club's receipts from entrance fees only footed up to $8500, leaving a deficit of $922.37.

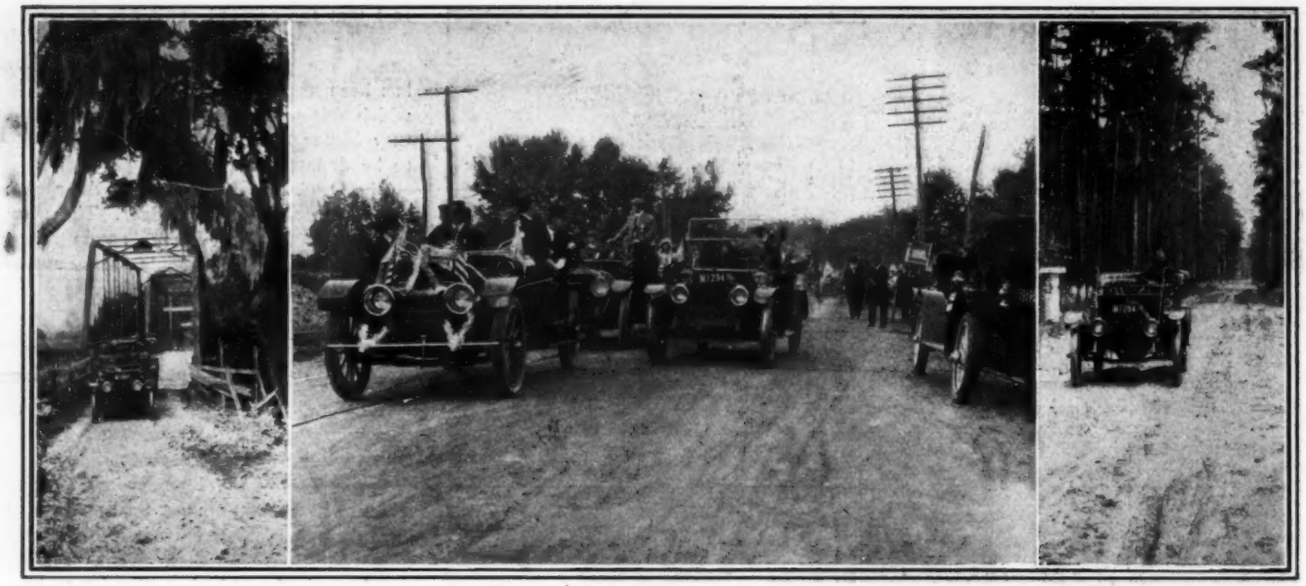
Around Georgia Tour

ATLANTA, GA., Oct. 30—Owing to the complaints of Southern amateur owners who took part in the recent Glidden tour the promoters of the Tour Around Georgia, which will be run to the Savannah races, have announced most extremely liberal running conditions for their event. The top speed required will be but 18 miles an hour. It is also provided that the contestants will be allowed to run right along without using the hour allowed for the noon control. They will also be allowed to make repairs on their cars on their town time.

T. C. A. Tour's Progress

CHERAW, S. C., Oct. 30—The Atlanta-to-Richmond tour which is being conducted under the auspices of the Capitol Highway Association, the American Association for Highway Improvement, and the Chamber of Commerce of Richmond, Va., under the direction of the Touring Club of America, stopped here for luncheon. The tour left Camden this morning and will stop to-night at Pinehurst, N. C. The party expects to reach Richmond on Friday night. A Chalmers Six driven by Freeman Monroe, of Detroit, Mich., is leading the party under the command of Col. Henry MacNair, editor of the Official T. C. A. Automobile Blue Book.

Masks to protect the face from very cold winds and made of leather or other material with mica window, and one of the 1912 models of Arctic overcoats



Crossing the Suwannee river, famous in song

The reception which was accorded the tourists as they swung into Atlanta was a most enthusiastic one

An elegant road through the turpentine country

Fourteen Clean Scores in Glidden

THE Maxwell factory team, entered as representing Tarrytown, N. Y., won the Glidden Trophy of 1911, scoring perfect for all three cars during the entire 11 days of running from New York to Jacksonville. Two of the cars would have been penalized for the run into Roanoke, Va., but for the ruling of Referee Walker that all cars should be allowed 26 minutes on account of delays resulting from a blockade of the road by two automobile fire engines that mired down a few miles south of Natural Bridge and held up the Glidden cars for that length of time. Despite this delay one of the cars checked in on time and the others were only 6 minutes late.

The winning was accomplished with much certainty and the cars were scientifically handled throughout. Deadly speed when unnecessary to make controls was not resorted to. There was no effort to check the team in with an hour to spare, simply to get in ahead of others. The three drivers, Walls, Gager and Costello, are experts and drove on a definite speed schedule just sufficient to make controls with an allowance for possible tire trouble and for adjustments before checking in.

The Stevens-Duryea team, representing Atlanta, was a close second in the race for the trophy. These big cars, numbers 11, 39 and 66, received a total of nineteen demerits, all of which were scored against number 66, entered by Brooks Morgan and driven by Murphy. The car was 36 minutes late in reaching Roanoke, owing to the blockade and was allowed 26 minutes under the rule, leaving it with ten points for the day. The following day it was 9 minutes late in reaching Winston-Salem. The other cars were clean throughout the running.

The same sort of a story may be told of the Jacksonville Cadillac team, which had two clean scores at the finish and one car, Number 47, penalized 23 minutes for lateness into Roanoke.

Similarly reads the story of the Ford team's showing. Car 43 suffered a broken axle out of Roanoke and was demerited 125 points. The others were clean all the way.

Group of officials taken at Thomas. Secretary Butler on lower step

The wrecked car in which Secretary Butler lost his life

FULL STORY OF THE GLIDDEN TOUR TOLD IN THE PENALIZATION TABLES

Team.	Days. 1	2	3	4	5	6	7	8	9	10	11	Penalization.	
TARRYTOWN													
1 Maxwell	..	...	..	...	....	....	...	....	....	....	..	0	
2 Maxwell	..	...	..	...	....	....	...	....	....	....	..	0	0
3 Maxwell	..	...	..	...	....	....	...	....	....	....	..	0	
ATLANTA No. 2.													
11 Stevens	..	...	..	...	....	....	...	....	....	....	..	0	
39 Stevens	..	...	..	...	....	....	...	....	....	....	..	0	19
66 Stevens	..	...	..	10	9	....	...	....	....	....	..	19	
JACKSONVILLE.													
32 Cadillac	..	...	..	...	....	....	..5	....	....	....	..	0	
40 Cadillac	..	...	..	...	....	....	...	....	....	....	..	0	23
47 Cadillac	..	...	..	23	....	....	...	....	....	....	..	23	
ATLANTA, No 3.													
43 Ford	..	...	..	125	....	....	...	....	....	....	..	125	
44 Ford	..	...	..	...	....	....	...	....	....	....	..	0	125
45 Ford	..	...	..	...	....	....	...	....	....	....	..	0	
LIVE OAK													
31 Cadillac	..	...	..	...	189	....	...	....	....	....	..	189	
51 Cadillac	..	...	..	13	....	....	...	....	....	....	74	87	279
74 Cadillac	..	3	..	...	....	....	...	....	....	....	..	3	
NASHVILLE.													
58 Marathon	..	...	..	72	153	....	...	....	....	....	..	225	
57 Marathon	..	...	..	...	210	....	...	....	....	....	31	241	509
56 Marathon	..	...	..	9	34	....	...	....	....	....	..	43	
DETROIT.													
53 Flanders	..	591	..	...	...4	21	...	....	....	....	..	612	
54 Flanders	..	...	..	...	....	....	...	....	....	....	..	0	1028
55 Flanders	..	...	..	416	....	....	...	....	....	....	..	416	

Scores of Teams Disqualified by Withdrawals

GEORGIA-DIXIE.													
4 Maxwell	..	...	..	...	....	....	...	....	....	....	..	0	
49 Columbia	..	...	..	...	....	....	...	....	....	....	..	0	1000
50 Maxwell	..	..	..	1000	....	....	...	....	....	....	..	1000	
ATLANTA JOURNAL.													
5 American	..	...	..	...	....	....	...	....	....	....	7	7	
6 Thomas	..	...	..	...	....	1000	...	....	....	....	..	1000	1034
7 White	..	...	..	...	18	....	9	....	....	....	..	27	
ATLANTA, No. 4.													
10 Pierce	..	...	..	...	12	14	...	....	....	....	14	40	
12 Marmon	..	...	..	...	....	1000	...	....	....	....	..	1000	2148
64 Pierce	..	...	..	3	105	....	...	1000	....	....	..	1108	

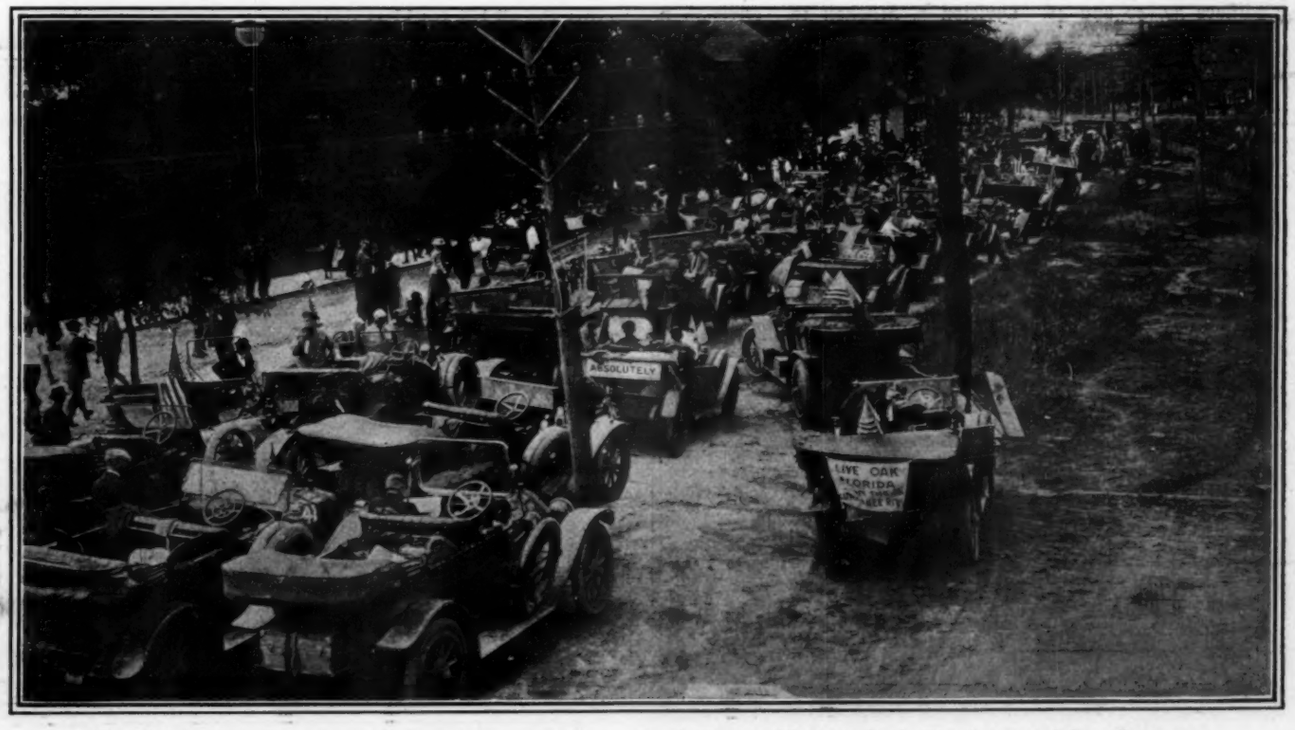
Team	Day 1	2	3	4	5	6	7	8	9	10	11	Penalization.	
EVERGLADES.													
33 Cole	..	...	..	87	13	62	...	19	....	....	..	181	
46 White	..	...	..	4	42	....	...	4	1000	....	..	1050	1231
48 Cadillac	..	...	..	...	....	....	...	....	....	....	..	0	
CORDELE.													
60 Oldsmobile	..	...	..	4	81	26	39	1000	....	....	..	1150	
65 Oldsmobile	..	...	..	...	....	....	...	17	....	....	..	17	1175
69 Oldsmobile	..	...	..	1	....	....	...	....	....	7	..	8	
ALBANY, GA.													
34 Halladay	..	63	..	...	....	....	...	....	....	....	..	63	
35 Halladay	..	...	..	...	228	....	...	....	....	....	..	228	1322
36 Halladay	..	31	..	...	....	1000	...	....	....	....	..	1031	
ATLANTA, No. 1.													
8 Flanders	..	...	..	...	....	296	...	....	....	....	..	296	
63 Flanders	..	...	..	...	104	....	...	....	....	1000	..	1104	1405
61 Flanders	..	...	..	5	....	....	...	....	....	....	..	5	
WALTHAM, MASS.													
15 Metz	..	...	..	...	130	24	6	....	....	....	..	Not in	
16 Metz	..	...	..	...	57	....	328	....	....	....	..	Not in	
17 Metz	..	...	..	...	1000	....	...	....	....	....	..	1000	
ATLANTA, No. 6.													
18 Garford	..	...	..	960	10	....	...	....	....	....	97	0	
19 Mitchell	..	...	..	...	....	....	...	....	....	....	..	0	1970
20 Schacht	..	...	..	...	....	1000	...	....	....	....	..	1000	
ATLANTA, No. 7.													
21 Corbin	..	...	..	...	23	....	...	....	....	....	..	23	
14 White	..	...	..	152	981	1000	...	....	....	....	..	2133	3156
22 Thomas	..	...	..	...	....	....	...	....	....	1000	1000		
FLORIDA.													
28 Cadillac	..	4	..	...	....	....	...	....	....	....	..	4	
29 Cadillac	..	...	..	226	....	....	...	....	....	Dis.	..	226	1344
37 Cadillac	..	...	..	...	3	11	...	....	....	....	..	14	

How the Individual Entrants Fared

27 Chalmers		13
42 E.-M.-F.	(withdrawn)	2342
26 Mitchell		88
41 Winton		54
52 Packard		14
59 Cadillac		146
70 Krit		45
71 Case		662
72 Haynes	(withdrawn)	1728
73 Mitchell		18

The Live Oak Cadillac team was heavily handicapped by the demerits imposed on Capt. W. J. Hillman's car. He waited for supper at Martinsville and was late in reaching Winston-Salem. The car also suffered clutch trouble at that stage of the tour. Both of the other members received penalties, No. 74 on the run into Gettysburg and No. 51 on the final day.

The Nashville Marathon team was roundly penalized on the fourth and fifth day's running and No. 57 broke spring and axle going into Jacksonville. This team, however, was the only one on the tour to make the whole distance under the power of its own engines. This happened because the three cars were the only ones that forded Back Creek without assistance. All the



Counting the contesting cars and the large escort, more than one hundred automobiles were in the line that started from Commerce

Not a little tire trouble was experienced by the contestants along that portion of the road which followed the foot of King's Mountain

others had one or more cars swamped in the raging torrent.

The Flanders factory team made a commendable showing most of the trip and one car came through with a clean score. Broken axles caused the others to be penalized.

The Metz team which had a clean score into Roanoke was overwhelmed by the run into Winston-Salem in the dark. The exceedingly rough mountain roads and the deep fords proved too much for No. 17, which broke a wheel and retired.

There were fourteen cars with clean scores at the end of the tour, namely: Maxwells 1, 2, 3 and 4, Stevens-Duryeas, 11 and 39, Cadillacs 32, 40 and 48, Fords 44 and 45, Flanders 54, Columbia 49 and Mitchell 19.

These cars drew for the Anderson, S. C., trophy, a huge silver punch bowl, and the choice fell upon Maxwell 4, the entry of Governor Hoke Smith, of Georgia.

The divisional prizes offered in each of the seven sections of Class A, consisting of $200 in each class, were won by the following. Where more than one car is named the prize was divided: Division 1, Fords 44 and 45 and Flanders 54. Division 2, Mitchell 26. Division 3, Maxwells 1, 2, 3 and 4. Division 4, Cadillacs 32, 40 and 48. Division 5, Mitchell 19. Division 6, Stevens-Duryeas 11 and 39 and Columbia 49. Division 7, American 5.

The official cars all had a rough trip. The pacemaking Cunningham was wrecked at Tifton; the Pierce-Arrow press car was smashed early in the run in Virginia; the Reo pilots experienced several accidents, one breaking a wheel and the other dislocating its propeller shaft in a North Carolina ford. The Reo truck made controls in good style and the Velie Press car was always on hand. The Chalmers Six had no trouble after the first day when it suffered a burned bearing.

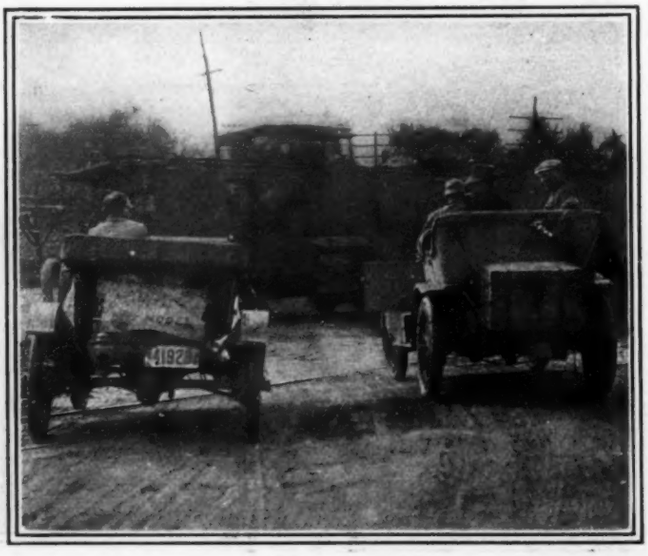
Rain Again the Last Day

JACKSONVILLE, FLA., Oct. 26—In a tropical downpour the Glidden Tour of 1911 finished its schedule here to-day after a wonderfully fast run across the dreaded sands of Florida. The start this morning from Live Oak was made at 8 o'clock and throughout the contesting column the impression was widely held that there would be no 20-mile cars to make clean scores for the day and that the chances were slim that any automobiles traveling on slower schedules than that would get through on time.

But the rain that worked such havoc in Virginia saved the day and the intermittent showers that fell in the morning aided the traction and were solely accountable for the fine showing made across the all but trackless waste.

Nearing Jacksonville the rain increased in intensity and when the cars were lined up for the run into the city the rain came down solidly. It spoiled the plans for a monster reception, which fact was not without its agreeable features to the tourists in view of the trial afforded by the Atlanta reception.

Chalmers press car in the pine forests near Live Oak



Several cars were delayed by a train across the road at Spartansburg

Pilots ask directions of convict road makers below Anderson, S. C.

Waiting for road repairers to fix up a small culvert near Anderson, S. C.

The road from Live Oak was fair for a few miles and degenerated into a trail through pine barrens, winding along tortuously past swamps until Lake City was reached. The worst of the road lay between Lake City and Glen St. Mary, where the highway was meagerly marked and the sand would have been impassable at schedule time but for the hardening influence of the rain.

From Glen St. Mary to Jacksonville the road followed was a temporary trail largely built for the occasion. The building consisted in covering the softest spots with pine needles and marking the rest with confetti. The road is considered the worst in the country at its worst.

But when within 7 miles of the terminus the tourists came upon a magnificent macadam highway that will be eventually extended clear across the State.

Only two of the sixteen clean score cars that left Live Oak suffered penalties on the last day. These were American 5, which heated up in negotiating the sands, and Mitchell 73, which experienced tire trouble several times during the latter part of the run.

Otherwise the final standing of the teams and individuals was not disturbed.

The Tour Summed Up

Dripping with rain, beaten by road and weather conditions almost from the start of the run from New York, the Glidden tour rolled into Jacksonville last Thursday. With spirits drooping under the tragic happening at Tifton, there was little lightness and happiness in the column that made the long trip, covering 1,454 miles in 11 days. Sixty-four typically representative American automobiles started from New York in the contesting division and only forty-seven finished with scores good enough to receive official cognizance.

On the face of the event this was a surprising showing, but under the surface there is an excellent reason. The wonder is not that seventeen cars fell out and were penalized at least 1,000 points each, but that forty-seven finished and fourteen had clean scores.

There were three running days when road conditions could not have been worse. The run into Gettysburg was hard, but the roads encountered in Pennsylvania were fine highways in comparison with the route on both sides of Roanoke and through the sands of Florida.

As fortune would have it rain fell in a deluge upon the tour after leaving Natural Bridge, making the road tractionless where it was not bottomless. This rain extended southward and converted what were supposed to be passable roads leading well up toward the summit of the Blue Ridge into smeary imitations of toboggan slides. Six unbridged creeks, swollen and angry by the rain in the hills, added to the problem of the run into Winston-Salem. In Florida the rain was a life-saver, hardening the sands so that it was possible for the cars to get through.

The major portion of the demerits imposed came on the fourth day or later, because of it. Many of the drivers were Southerners and most of them owned their own cars. The problem presented to them by the roads in Virginia was so complex that many of them took penalties rather than try to get in on time.

When the report of Secretary Butler's death was circulated, the tourists lined up near the scene of the accident to await instructions

Line-up of the twenty-six contestants in the Long Island Automobile Club's Schimpf trophy run

Long Islanders' Secret Time Run

BROOKLYN, N. Y., Oct. 30—The contest for the Schimpf trophy, in which twenty-six members of the L. I. A. C. participated, started here on Saturday at 1 p. m. The contest was not one of skill, but one of luck rather. Before the start every contestant entered his name on a sealed envelope containing a total running time for the trip to Jamaica and return to the clubhouse. The only condition of the run was that on their way to Jamaica the tourists had to pass through Roslyn, East Norwich, Hicksville and Hempstead in the order named. Among the automobiles which took part in the pleasure run were several 1912 models.

During a dinner following the return of the "joy riders" to the club the envelopes were opened and the times demanded compared with the actual running times of the contestants. This process developed the result that Louis A. Vogel, Jr., was declared winner of the Schimpf trophy, approaching his secret time as near as 1 minute and 7 seconds. J. E. Frink, who came within 1 minute 8 seconds of the sealed time, was second, and W. H. Kouwenhoven third, with a difference of 2 minutes and 5 seconds. Several contestants experienced slight trouble with motor policemen, and it was due to the efforts of the donator of the trophy that the lawbreakers were given their liberty without considerable delay.

Forty-four in Watson Cup Contest

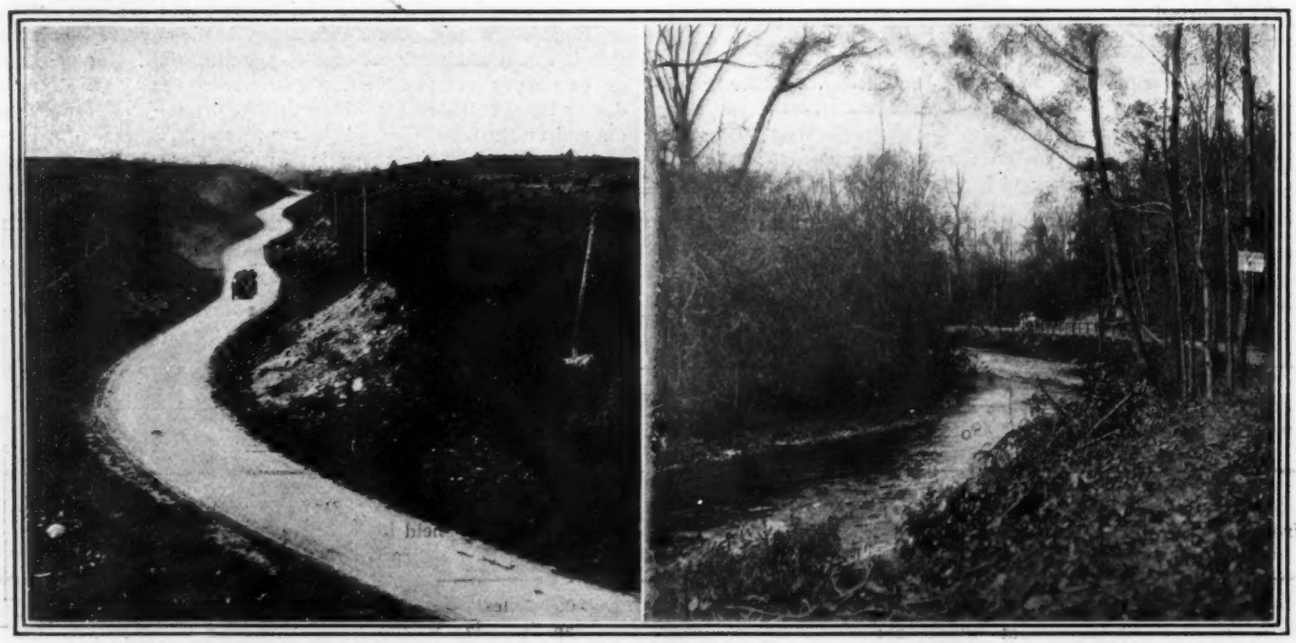
SYRACUSE, N. Y., Oct. 30—Ernest O. Cowan, with a Firestone-Columbus, won the second annual Watson cup run, held Wednesday. The event was under the auspices of The Automobile Club of Syracuse, and had to be postponed several times because of bad weather. It was finally held under ideal weather conditions over a beautiful scenic route approximating 100 miles, dinner being had at Cortland.

The start and finish were from the court house in this city. Forty-four cars participated and there was not a single accident, barring a few punctures. Every car finished.

Mr. Cowan's time was 4:59:15 and the secret time established was 4:56:37. S. L. Devendorf made the run in exactly 4:59, but was debarred from holding the cup for the ensuing year because he was not a member of the club. A Ford accessory truck accompanied the "parade."

Mrs. Jane M. Bartels received the cup given the woman driver coming closest to the secret time. All those participating were unanimous in pronouncing the run a complete success and it will be repeated next year.

The officials were: Starter, C. A. Benjamin; referee, H. W. Smith; pilot, B. E. Watson; manager of run, Edward Churchill. Secretary Forman Wilkinson, George E. Messer and J. E. Doane figured the time.



Some of the beauty spots encountered by the contestants in the Watson cup contest of the Automobile Club of Syracuse

Berlin's International Show

AFTER an interval of four years since the last show was held in 1907 the German automobile industry has this year again arranged a large international automobile exhibition under the auspices of the Imperial Automobile Club and the Association of Automobile Manufacturers. It was opened October 12 by Prince Henry of Prussia after a preliminary introduction of the exhibits on the previous day to the journalists of Germany and the special representatives of foreign publications.

The exposition is located in large and sumptuous quarters close to the famous Zoological Garden of Berlin and the artistic arrangements and decorations as well as the superb lighting of the approaches to the building are universally praised, especially in comparison with the earlier German exhibitions where a super-esthetic rococo style seemed to class with the mechanical nature of the exhibits. The decoration scheme for the stands has this year been made uniform for all, so far as signs, festoonings and flower pots are concerned.

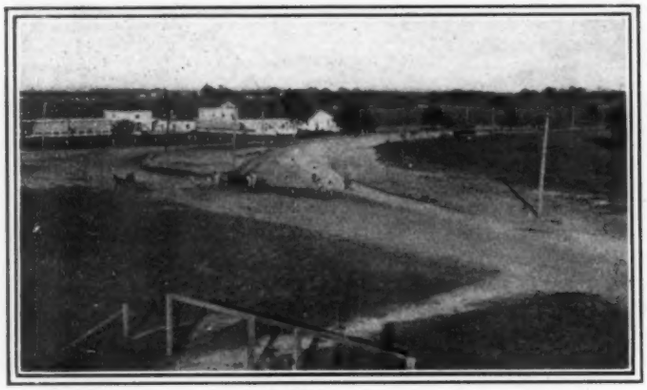
Among the exhibits a motor sleigh driven by an aeroplane propeller at the rear and steered by means of small skids in front is particularly noticed for its oddity, while a small electric three-wheeler, driving by the single wheel in front, also attracts much attention from the large majority of the visitors who do not pretend to be able to judge the mechanical refinements which form the only new features at most of the stands of the large German and foreign exhibitors. The motor sleigh, which may be noticed in the accompanying general view of one of the exhibition halls, could be intended only for arctic expeditions, as its unprotected propeller would be objectionable on any highway within the limits of civilization.

At a meeting of the Associated German Automobile Clubs on October 18, in connection with the exhibition and with the Duke of Ratibor in the chair, it was decided that there shall be no Prince Henry Cup race next year, a twelvemonth being required for formulating a set of rules and regulations for this important event, when it is resumed for 1913, which shall be found to answer the technical and sporting requirements of the day and hour. Provisions were made for the organization of a race in the Spring for small vehicles not exceeding 8-horsepower, and the Northern German Automobile Club was authorized to arrange in conjunction with a number of other clubs for a large touring expedition, without speed trials, to take place in June, the rules to be approved first by the Imperial Club.

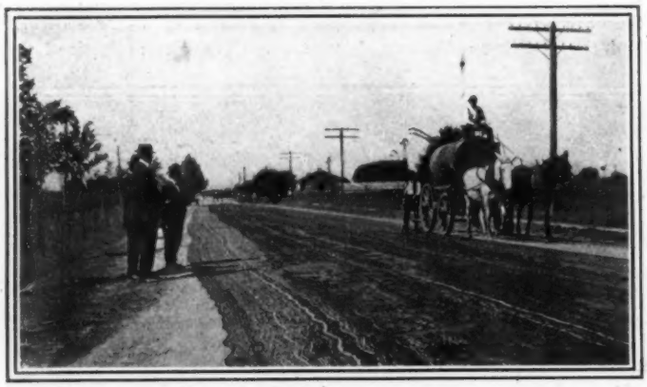
View of the International Exhibition at Berlin, held under the auspices of the Imperial Automobile Club and Manufacturers

American Wins Long Run

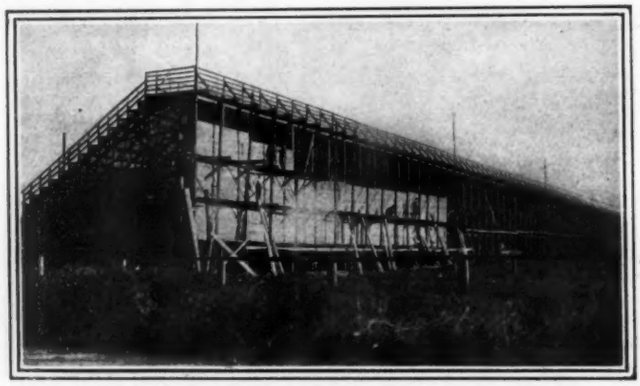
SAN FRANCISCO, CAL., Oct. 21.—The most severe automobile endurance run ever held in California came to a close Wednesday night when seven cars checked in at San Francisco after a run from here to Los Angeles and return, a distance of more than 1,000 miles. The penalties of each car were as follows: American "50," 87; Warren "30," 487; Flanders runabout, 857; American "50," 977; S. G. V., 1,195; Cartercar, 2,030; Flanders touring, 2,048.



Banking the turn from the grand stand stretch into Waters Road



Oiling a straightaway in preparation for Savannah road races



To prevent discomfort in the stands they are being boarded up behind

Banking the sharp turn to the grand stand, which was flat last year

Grand Prize Looms

SAVANNAH, GA., Oct. 29—Preparations for the four great road races to be given here November 27 and 30 are progressing rapidly. Within two weeks it is expected that the circuit will be ready for fast practice work and from then until the actual race days this city and the surrounding territory will be the focus of attention for the automobile world.

The course is being straightened and slightly shortened by the elimination of certain curves and turns that were present last year. The total length of the circuit will be almost exactly 17 miles, whereas before it was about 18 miles.

Turns are being banked so that it only will be necessary to shut down on two of them at the most. The engineering problems involved include lengthening and softening the angles, widening the roadway at the approaches and raising the outside edges of the course on the turns so that the chances of skidding will be minimized. In several cases crooked portions of the course have been cut out altogether by building new roads through the woods, connecting up the good stretches in satisfactory form. As a general proposition the narrow stretches have been doubled in width and the average width of the course has been increased nearly 4 feet.

From end to end the surface has been repaved and when fast practice starts the drivers will find everything in the best of condition. The course resembles in a general way the route used last year, but the improvements that were outlined in a previous issue of THE AUTOMOBILE will go a long way toward insuring safety and stimulating high speed.

So far $20,000 in round figures has been offered to the winners of the four races and before closing time it is expected that the prizes and purses usually hung up by accessory makers for winners and placed cars using their products will swell the total amount to over $30,000. The Bosch Magneto Company has offered $1550; Rayfield carbureter, $2500; Remy company, $4250, besides the purses of gold hung up by the Savannah Automobile Club, totaling $12,500.

The Vanderbilt Cup race and the contests for the Tiedeman and Savannah cups will be held November 27. The Grand Prix will be staged on November 30.

The conditions of the races are as follows: Vanderbilt Cup: Open to cars under Class C, divisions 4C and 5C that is, non-stock cars with piston displacement respectively of from 301 to 450 cubic inches and from 451 to 600 cubic inches. The conditions of Class C are that the factory shall have made at least fifty automobiles within the preceding year, not necessarily of the same model. The purpose of the rule is to bar out freak cars.

The distance of the Vanderbilt Cup race will be 289 miles, or seventeen circuits of the 17-mile course. The prize is the Vanderbilt Cup, a perpetual trophy which already has been contested for six times. The cup carries with it a cash prize to the winner of $2000 and the Donor's Trophy for permanent ownership. The entry fee is $500 for one car, $750 for a pair and $1000 for three cars, which is the limit for one make of automobile.

Until this year the Vanderbilt Cup races have been staged on Long Island over a course consisting of a portion of the Motor Parkway and country roads.

The Savannah Challenge Trophy, which includes a cash prize of $1000 and a Donor's Trophy for permanent ownership, is open to cars of Class C, Division 3C. This class includes cars having piston displacement of from 231 to 300 cubic inches, the next division below the smaller class in the Vanderbilt Cup race. The distance is thirteen laps of the 17-mile circuit. The entry fee is $250 for one car, $400 for two and $580 for three.

The Tiedeman Trophy race for the perpetual trophy of that name and a cash prize of $1000 is for cars of Class C, Division

in Near Prospect

2C, cars having a piston displacement of from 161 to 230 cubic inches. Entry fee is the same as for the Savannah cup. The distance is 170 miles or ten circuits of the course.

The Vanderbilt Cup, Savannah Cup and Tiedeman Trophy races will be run coincidentally on November 27. After they have been finished the racers will prepare for the greatest of all the free-for-all road races in the automobile world, the Grand Prize of the Automobile Club of America. Twice before has this contest been held and in each case a foreign car has borne away the honors. It has produced two of the fiercest speed battles ever witnessed and both times was won by the narrowest kind of margins.

A giant Fiat driven by Wagner won the first race and a Benz car piloted by Bruce-Brown went over the line less than 2 seconds ahead of the second car last year.

The contest is so framed as to attract the most powerful automobiles in the world, irrespective of their place of manufacture. It is free for all in a broad sense, the conditions of eligibility being extremely simple. They are as follows: No other agent of oxidation than atmospheric air is permitted. Each car must carry two persons seated side by side. Each must have a motor-driven reverse gear. Its exhaust must not be directed toward the ground. It must not be over 74 inches in width.

The entry of more than three cars of any one make will not be received and the entry fee is $1000 for one car, $1500 for two and $1750 for three.

There is no restriction as to size and power except that the cars will have to pass an examination at the hands of the Technical Committee touching their safety and that they may not measure more than 74 inches in width.

The race is to be 408 miles long or twenty-four circuits of the course, and it will be run on Thanksgiving Day. Entries for all four races close November 15.

A provision is made in the entry blank covering each contest reserving the right to the racing organizations to refuse any entry or to stage a series of elimination trials if the volume of entries should prove to be cumbersome. While the actual entries to date are few and have not been announced, it is believed that there may be as many as ninety in the four races.

In such an eventuality it is quite probable that there will have to be some form of elimination in order to make the fields small enough for safety.

So far the entries include the following (unofficially): Case 2, Fiat 5, Benz 3, Mercedes 3, Marmon 2, besides several others.

The advance sale of seats has been much greater than ever before at this stage, and preparations are being made to care for vastly larger crowds than attended last year. The hotel accommodations must of necessity be scanty, as usual, but great effort is being made to arrange for quarters for the visitors. Accommodations suitable for housing and feeding 50,000 visitors for at least four days constitute a problem of much magnitude for a city of the size of Savannah, but the committee is relying upon the Southern spirit of hospitality to come to its aid.

The problem presented is much more momentous than last year because of the gap that intervenes between the running of the Vanderbilt Cup and the light car races on Monday and the Grand Prix on Thursday. For a day it would be possible to camp out, carrying picnic eatables, but the idea of camping out four days in November, even in Southern Georgia, has its drawbacks.

The large hotel which will have a capacity exceeding that of any hotel existing now in the South, is not finished yet, and will hardly be so in time to accommodate the army of enthusiasts that will come to Savannah to witness the races.

5—New turn near Bona Bella, completed for this Fall's races

6—High speed will be made down Ferguson Avenue between the pines

7—The surface of the course is being repaved throughout the whole circuit

8—Another new turn, which will make La Roche avenue safer for the races

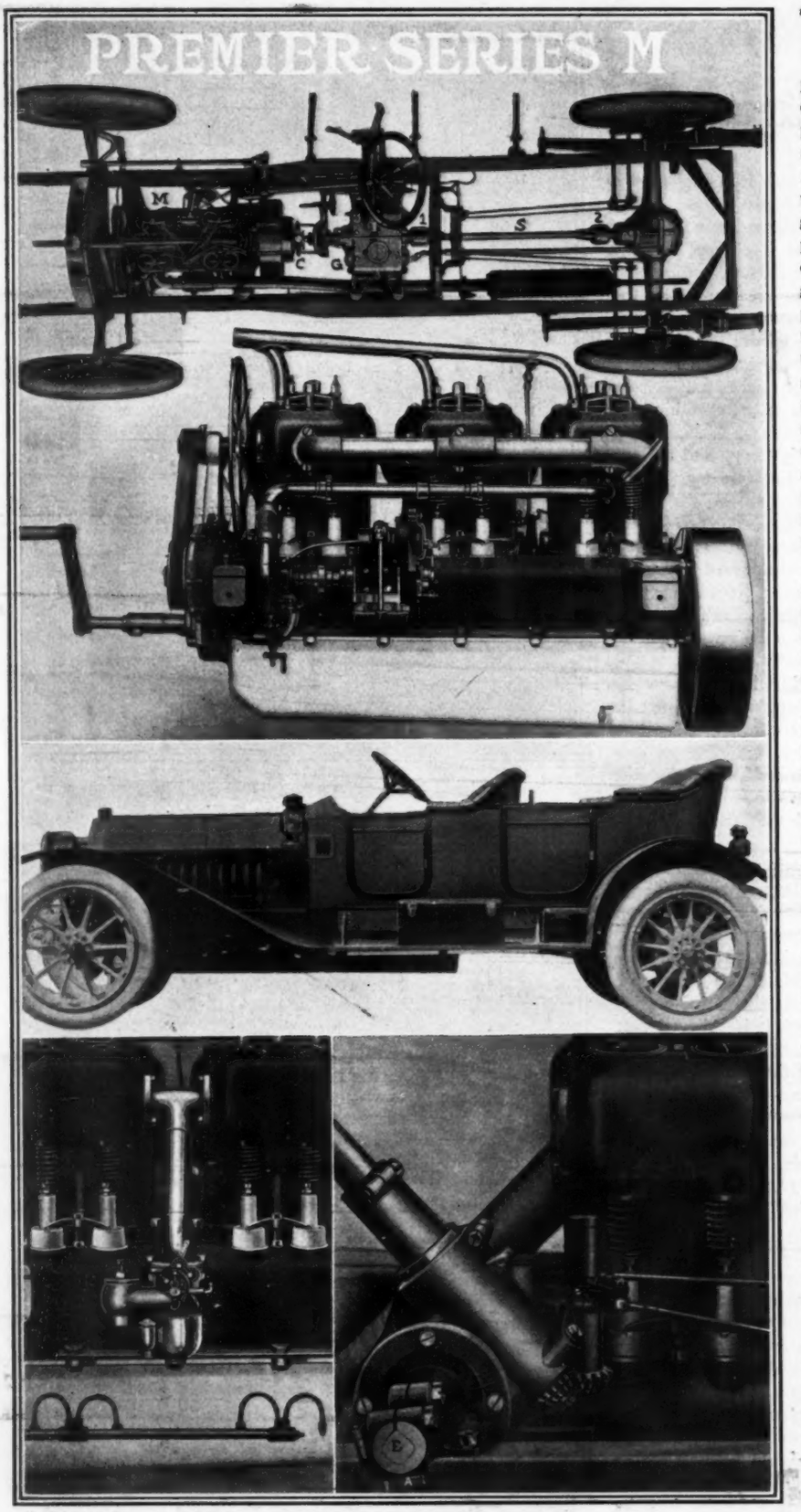


Fig. 1—Group of Premier Car Parts

In the upper illustration is seen the 1912 Premier four-cylinder chassis, showing the new style of brake equalizers. Beneath it appears the magneto side of the six-cylinder motor. The 1912 body styles is next shown. At the bottom on the left is the simple type of intake manifold on the four-cylinder motor and at the right is the steering gear mounted above the frame line so that the shaft E is carried over the frame side member instead of through it as is very frequent practice

THE policy of the Premier Motor Manufacturing Company for 1911 will be continued for the year 1912. The company will build both four and six-cylinder chassis, the ratio of production being approximately four times as many six-cylinder as four-cylinder cars. The constructions of 1911 are continued except in minor details where changes have been made by the engineering department. In the motor the improvements are largely confined to the use of improved push rods and push-rod guides, for lifting the valve stems. The push rods are now made with rollers on their lower ends to bear upon the cams and the camshaft. These rollers will eliminate side thrust to a large extent. An improvement has been made in the oiling system by adding a lead from the sight feed on the dash to the bearing of the magneto shaft and thence to the timing gear housing at the forward end of the motor. Helical timing gears introduced in the early part of the 1911 season are continued.

The group of illustrations, marked Fig. 1, give a general conception of the Premier chassis, the four-cylinder type being here illustrated. The chassis is a three-unit type, the motor M constituting the first unit, and carrying in the flywheel the multiple-disc clutch C. The selective gearset G is the second unit. The rear axle comprises the third unit. Between the gearbox and real axle is a propeller shaft S with two universal joints, 1 and 2. Between the motor and gearbox is a telescoping joint to allow for clutch disengagement. The motors whether of the four or six-cylinder type used the same twin cylinder castings of T-design, the bore being 4 1-2 inches, and the stroke 5 1-4. This is a stroke-bore ratio of 1.16 to 1. The motors are symmetrical units, having the carbureter placed centrally on the right side, and the water pump and magneto carried forward on the left side, a design which leaves all of the intake and exhaust valve springs accessible for removal if such becomes necessary.

Every care is taken in the manufacture of the motor, and one point which stands out in this respect is that the upper portion of the crankcase, instead of being an aluminum casting, is a close-grained semi-steel casting, which material is well adapted to hold the threads for the crankshaft bearings as well as the lower half of the case. The lower portion of the case, which serves the purpose of an oil retainer, is an aluminum casting. In the manufacture of the cylinder castings the cylinders are, after being cast, pickled to remove core sand. This done they are given a rough machining process and then heat-treated to relieve the tension of the outside scale. This process completed, they are bored, enameled and finally ground. The pistons, of gray iron, are each fitted with three compression rings. Connecting rods are I-section drop forgings and have large bearings. The crankshaft of the six cylinder Premier

is illustrated in the group on Fig. 2. It has four main bearings, whereas on the four-cylinder motor but three bearings are used.

The oiling system of the Premier is a circulating one, the complete details of which are shown in Fig. 2. In the top illustration is shown the oil pump P outside of the oil reservoir. It delivers the oil through a horizontal pipe to the six leads or branches 1, 2, 3, 4, 5 and 6. Each lead pours its supply into a trough T in the base of the crankcase, which is shown in the bottom illustration. On the bottom on each connecting rod is an oil scoop S which dips into the oil trough, picking up the oil, carrying a part of it to the lower connecting rod bearing and splashing a portion into the open cylinder. The oil which overflows from the troughs T drains into the reservoir to the pump, whence it is ready for recirculation. The size of the oil scoops S on the connecting rod caps has been experimentally calculated so that it is claimed they supply just sufficient lubrication without any tendency to induce smoking. Over each crankshaft bearing is a pocket which is filled by the splash, the oil leading from the pocket into the bearings. The oil reservoir, formed by the base of the crankcase, has capacity for two to three gallons at one filling, which is sufficient for 500 to 750 miles of road travel. To insure the driver as to the certainty of motor lubrication a sight feed has been placed on the dash. In addition to the motor lubrication there are various parts of the car, chassis, oil and grease cups, which take care of the gearset, rear axle, universal joints and other necessities.

Ignition on both four and six-cylinder Premier models is the conventional dual type, current being supplied by high-tension magneto. The simplicity of former years in the use of a simplified intake manifold is continued, the Premier Company being the first concern in America to use the simple vertical pipe from the carbureter to a point between the valve housings of the front and rear cylinder pair, as illustrated at the lower left corner of Fig. 1. This manifold calls for but a T-union between the cylinder castings, the remainder of the air passage to each casting being a water-jacketed space within the casting. The manifold employed on the six-cylinder motor, a Y-type, is shown in the upper illustration, Fig. 2. The use of manifolds of this nature adds to the accessibility of valve parts.

The clutch is of the multiple-disc type encased and running in oil. It is made of twenty-one plates arranged in alternate sets, ten in one and eleven in the other. Fig. 3 shows the general makeup and also illustrates one of the plates P with its cork inserts. These inserts are used to prevent gripping and allow of picking up car speed and drawing down to that of the motor without strain or shock on the mechanism of the car. The shaft between the clutch

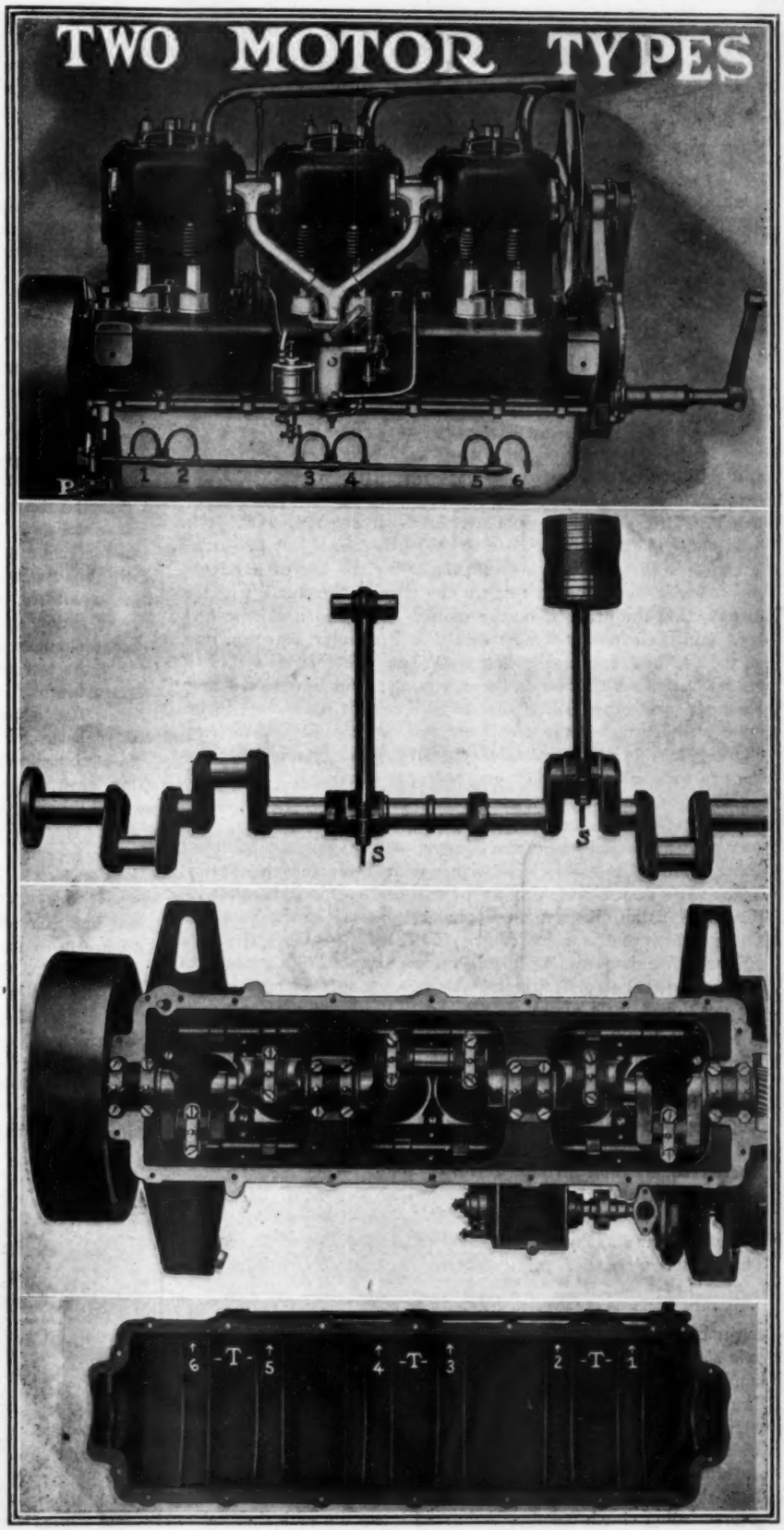


Fig. 2—Group of Premier Car Parts

This illustration shows at the top the intake side of the simple intake manifold used on this motor, a part of the gas passages are cored into the valve chambers in the castings. The second illustrations show the scoops on the caps of the connecting rods for oiling the bearings. The bottom illustration is of the inside of the crankcase base showing the six oil troughs into which the scoops S dip, the oil being fed into these troughs by means of the six oil leads marked 1, 2, 3, 4, 5 and 6

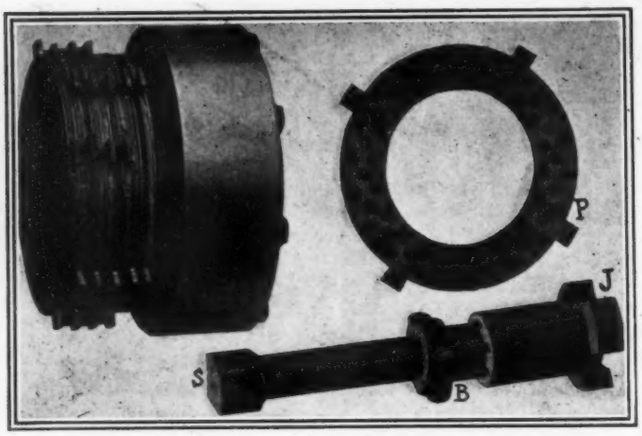


Fig. 3.—Premier multiple-disc clutch for 1912

and the greatest telescopes the part J with three jaw teeth extending into the gearbox and forming part of the direct drive clutch. This sliding member works on a shaft B with four broaches. The forward end of the shaft is squared at S, where it connects with the clutch mechanism. By the use of a releasing collar it is possible to remove any part of the clutch without dismounting the gearbox or the motor. The clutch release has been improved in that it now carries two annular bearings, one at the top and one at the bottom. The release consists of a bronze collar which carries these bearings, which work against hardened and ground steel discs. The release is claimed to be quite free because of the use of annular bearings and the bronze clutch plates being completely separated from one another by the use of steel springs between adjacent plates.

Nine years ago the Premier company on its original cars made use of a sliding gearset, a type now universally in the car field and one which has been improved upon year by year by the company. It is of the selective design, giving three forward variations. The design and location of the gearbox is illustrated in Fig. 4. It is an oil-tight aluminum case carried direct from the side members of the main frame. To carry the main and countershafts five imported ball bearings are used. The gears are cut from nickel steel forgings. At each end of the main shaft are positioned little plates on the shaft, so placed that by their centrifugal action they throw back upon the gears any lubricant tending to work out past the end of the shaft. This is an ingenious scheme to prevent the leaking of lubricant from the case.

Back of the gearset and connecting it with the rear axle is the propeller shaft with its two universals packed in grease. Each end of the propeller shaft is a tapered square which fits into a tapered square hole in the universal joint. This construction gives a positive connection with the proper amount of tightness. Parallelling the propeller shaft is a V-design of torsion tube, the spreading arms spanning the differential housing at the rear. The front end of the rod is retained in a spring cushion ball joint.

The Premier rear axle has always been a special feature in conjunction with these cars and is illustrated in Fig. 6. Each axle sleeve A is a tapered and slightly bell-shaped turned forging, and the differential housing G is a crucible steel casting. The axle housing is not supported by any truss rods, but has an internally ribbed housing which gives added strength. The axle drive-shafts B are carried at the inner ends on roller bearings and the outer end on a single annular ball bearing. On the axle drive-shaft is an integral clutch member C which locks with a corresponding clutch member D formed integrally with the brake drum. The construction of the clutch part D may be seen to advantage in Fig. 5.

The differential is of the bevel gear type and upon it is mounted the main driving gear, and through hand-holes in the rear of the housing the differential and the gear may be adjusted laterally to take up any wear. Correspondingly, the pinion which transmits the rotary motion of the driving shaft to the floating axle gear is adjustable longitudinally, so that with these two adjustments the gears can readily be made to mesh properly should it be necessary to change their setting. There are eight anti-friction bearings in the axle, the roller thrust bearing on each side of the differential, imported annular bearings at each outer end of the axle shaft and four bearings in connection with the pinion, two of which are thrust bearings. The pinion is forged solid with the shaft, contrary to the usual practice of keying it. This construction obviates any danger of a loosened gear and gives a stronger one. The pinion is mounted between two imported annular bearings, an important feature and one much more desired than the common method of having both bearings on the front end, leaving the rear unsupported. The thrust is taken by two annular bearings with an adjusting collar to provide adjustment.

At the ends of the axle housing are the brake supports, rigidly attached and hot riveted so that they cannot loosen. The brake drums are integral parts of the wheel hubs not separable and bolted on. The live axle shafts are squared at the inner ends to fit into the differential. A liberal annular bearing is placed almost in the direct load-carrying center of each rear wheel, a construction made possible by the use of the semi-floating live axle. With this type of axle also the distance between bearings is about 24 inches, giving a large distance through which the supporting action against lateral strains takes place.

Some changes have been made in conjunction with the brakes in that the internal expanding sets are now steel bands covered with raybestos. Formerly bronze shoes with cork inserts were used. The external contracting brakes are steel bands lined with raybestos. A change has been made in the equalizing principle of these brakes in that short equalizers are used. (See Fig. 1, top illustration.) These equalizers are placed immediately in rear of the frame cross-member back of the gearset. For this year the equalizers were long members working in slots through the side members of the frame. With the new construction all of the brake operating pars are located within the side members of the frame. The two shafts for operating the brakes on each wheel are carried on the rear axle housing and in front of it. Adjustment of the brakes can be made by lifting the floor boards in front of the driver's seat. The brakes have a total area of 526 square inches.

In the Premier running gear the frame side members are heavily reinforced midway of the axles and the channel lips gradually taper to the rear. The rear corners are braced by pressed steel gusset plates and at the front are integral gusset plates which extend down to the radiator supports. The front springs are 36 inches long and the three-quarter elliptic rear ones have the bottom section 50 inches and the top section 26.

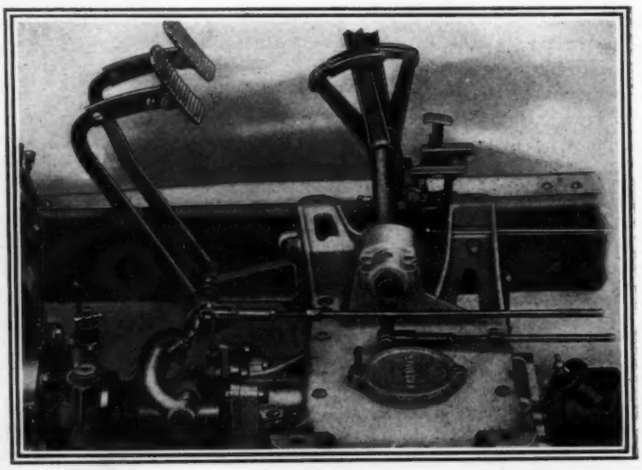


Fig. 4—Gearbox and operating pedals on Premier

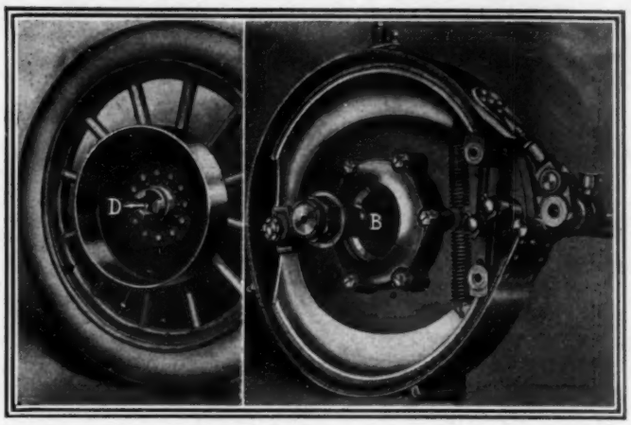


Fig. 5—Improved brakes on the 1912 Premier models

The front axle is a one-piece forging with Elliott-type ends. In the knuckle design the load-carrying center has been brought into the closest relation to a center line through a king bolt constituting the steering center. Thrust bearings are used in the top of the king bolt to carry the vertical load. The lower end of the bolt is held in hardened and ground bushings, the steering cross rod being placed in the rear of the axle. The front wheels are carried on tapered roller bearings.

The general location of the Premier steering gear is shown in the lower right-hand corner of Fig. 1. The bottom of the steering column carries a steel worm in mesh with a spiral gear which is carried on the shaft E. The shaft has a squared end and onto it is mounted the radius arm A, which extends downward and has a ball joint on its lower end. The shaft E is mounted in eccentric bronze bushings so that it can be adjusted with relation to the worm on the steering column. The gear on the shaft E travels less than one-quarter of its circumference for any movement of the steering wheel, and should this quarter become worn it can be shifted so that any of the three remaining quarters can be meshed with the worm, thereby increasing the wearing field of the gear fourfold.

One feature of the Premier body line is that the five and seven-passenger bodies are interchangeable on the four and six-cylinder chassis. In addition to regular touring body styles the 1912 line includes close-coupled types for four and five passengers, the Clubman design, and roadster styles. Inclosed types of limousine lines are included. In all the standard finish is blue black with black panel lines and light striping. The wheelbase on the four-cylinder model is 126 inches and that on the six-cylinder is 140 inches. Both chassis are fitted with Firestone demountable rims. Tire sizes on the four-cylinder cars are 36 by 4 1-2 all around, and on the six-cylinder chassis the front wheels carry 36 by 4 1-2-inch sizes and the rear wheels 37 by 5. This arrangement on the six-cylinder chassis gives a larger wheel tire, but it is a size which is interchangeable with the front wheels so that there is no necessity to carry a double supply of spare tires.

Modern Rustproofing Methods

By the Bontempi rustproofing process, one of the latest along this line, the iron or steel article to be treated is placed in a muffle furnace and brought to a heat of about 1350° Fahrenheit, when dry superheated steam is introduced in the furnace and a cartridge containing certain chemicals is broken, also inside of the furnace, and the steam in combination with the chemicals forms certain gases which penetrate into the heated steel and impart to it a rustproof shell which is of greyish color and whose thickness depends upon the time of exposure. If it is desired to conserve the properties of the iron or steel article as much as possible, it is kept under cover, so as to protect it against oxidation from the atmosphere and cooled very slowly. As this process practically involves annealing of the metal and, in the case of wire chains for example, has been known to reduce the tensile strength of the part considerably, it is scarcely applicable to automobile parts which have been heat-treated or hardened, and it is in fact quite possible, in the absence of tests in proof or disproof, that the process may weaken any part or article to which it is applied. On the other hand, the applications of the process are very numerous in other directions where the question of strength is subordinate to questions of surface and appearance. The advantages over sherardizing consist mainly in the coloring of the coat, which may be made black and matt black, as well as grey, by the use of oil on the heated surface, and in the fact that the active gases take effect in every nook and corner and particularly on the inside of hollow objects, while the tumbling process required for sherardizing cannot readily be used for any but smooth exterior surfaces and also requires considerably longer time. The company which is now erecting furnaces at Bridgeport, Conn., contemplates to experiment considerably before undertaking to recommend its process for articles employed for dynamic work, having a wide field where the rustproofing as such is the principal requirement. It is stated that articles treated by the Bontempi process resist attacks from acids and preserve their appearance indefinitely.

As one of the new methods by which other substances than carbon are introduced into iron and steel by cementation, and foreshadowing the time when all automobile parts may be machined in common soft steel and afterwards transformed into parts of great hardness and strength through the introduction of suitable alloys, whether these alloys penetrate the steel in solid or in gaseous form, the rustproofing and sherardizing processes claim the attention of automobile engineers.

Honesty Best in the End

The feeling of distrust with which the average car owner looks upon the public garage has been discussed from various angles, and many owners naturally dread the idea of entrusting their cars and pocketbooks in the hands of those whose honesty has been so much debated. Nothing is so hard to regain as a lost reputation, and the short-sightedness of the few in the earlier days of the public garage business is much to blame for the existing conditions.

Restrictive legislation and the vigilance of the owners and garage proprietors, who have lost the idea that catering to a dishonest chauffeur is good business policy, have gone far in limiting the activities of the joy rider, so that on the whole the prospects are not so dark as they are painted. In the matter of repairs, the same may be truthfully said to be the case, although in this as in all other matters of purchase the energetic salesman will often have to be restrained.

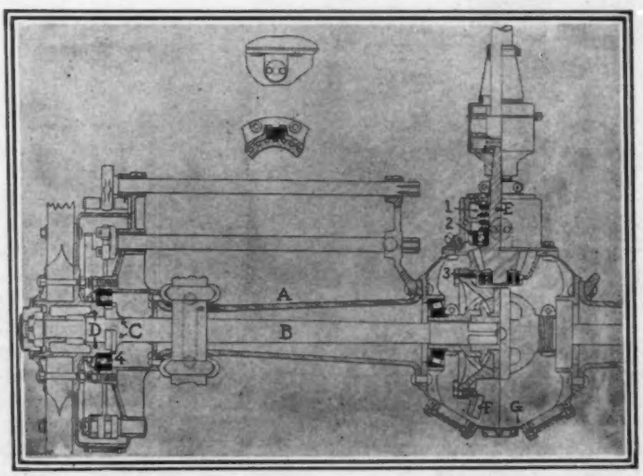


Fig. 6—The patented rear axle on the Premier

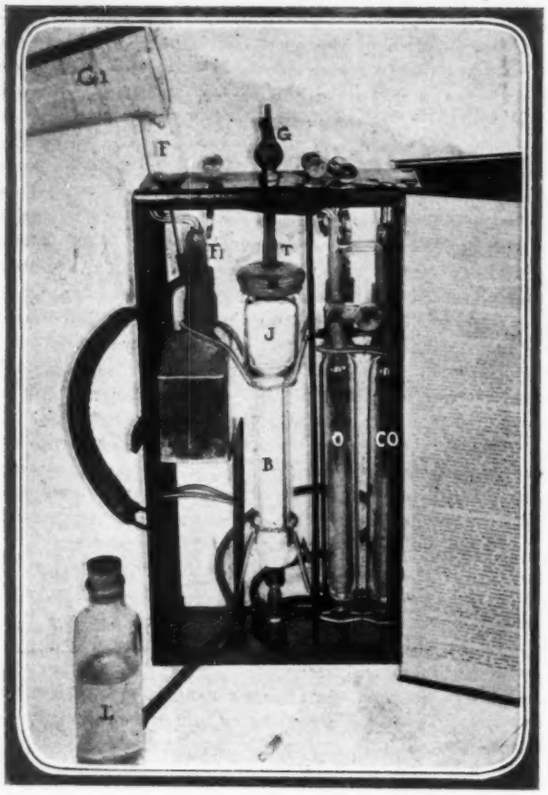


Fig. 1—Getting ready for the carbon dioxide analysis. The caustic is cautiously poured into the CO_2 chamber through a funnel, and the problem is not to spill any of the highly active alkali on either one's hands or clothes

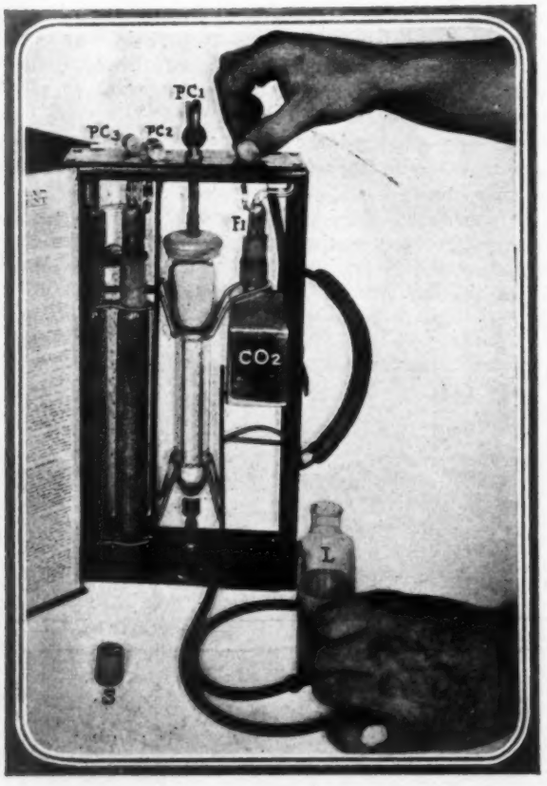


Fig. 2—Regulating the level of the caustic potash. With the cock closed tightly and pinch check held wide open, the leveling bottle is manipulated so as to raise the caustic to the top of the metal filing above the CO_2 chamber

How to Analyze the

IN order to get the maximum of work out of a motor, leaving all other things out of consideration, it is absolutely necessary that the mixture is right; that is, that gasoline and air are contained therein in a definite ratio, which, when the mixture is completely burned, will result in the motor's delivering the highest possible amount of power which may be realized from the quantity of fuel used.

The ideal mixture, according to numerous tests, contains about 14 volumes of air to one of gasoline. Gasoline, as is well known, is essentially a mixture of various hydrocarbons, prevalent among which is hexane, C_6H_{14}. This compound contains a fixed amount of energy per pound, which is set free and may be utilized if all of the carbon (C) and of the hydrogen (H) composing the hexane are burned to carbon dioxide and water, respectively. If the ratio 1 to 14 is diminished the gasoline will not be offered enough oxygen, and consequently part of it will escape unburnt or partly burnt, forming hydrogen and carbon monoxide. If, however, a mixture of a ratio higher than 1 to 14 is employed the surplus of oxygen will be of no use, and the additional amount of nitrogen which always accompanies oxygen in the air will go to stifle combustion and to decrease the rate of flame propagation.

Thus, a rich mixture will result in an excess of carbon monoxide in the exhaust of a motor, whereas too lean a mixture will produce an exhaust containing a high percentage of oxygen. In both cases the thermal efficiency is below the maximum. The maximum thermal efficiency is said to obtain at the ratio of 1 to 14.5. Some empirical results, compiled by a foreign expert, are given in the following table:

RELATIONS BETWEEN THERMAL EFFICIENCY AND EXHAUST COMPOSITION

Thermal Efficiency.	Per Cent. CO_2.	Per Cent. H.	Per Cent. CO.
.162	6.0	8.7	11.6
.204	9.6	2.65	6.25
.238	10.6	2.1	5.0
.244	10.9	Not determined	
.252	12.8	Not determined	
.261	13.5	Not determined	

These primary considerations will serve to carry conviction to the effect that the efficiency of combustion will react infallibly upon the composition of motor exhaust. Therefore this composition permits of drawing safe conclusions as to whether anything, and what, is at fault about the process of combustion taking place in the engine cylinders; it will also be a positive indication as to what means have to be resorted to in order to remedy the existing trouble; whether the motor needs a richer or leaner mixture, and whether the ignition is to be advanced or retarded.

The analysis of the exhaust is by far easier than it is generally considered to be; in fact, the necessary apparatus has to-day reached a state of development where no chemical knowledge whatever is required to do this work. There are several methods of making an analysis of a gaseous mixture, and the simplest one, which is sufficiently accurate for any tests the automobile user or engineer might be interested in, will be described in the following.

For analysis a sample of the gas to be tested is stored in a bent glass tube between two liquid levels and the space taken up by the gas is noted. After this has been done all of the gas sample is forced through a solution of caustic potash, which instantly absorbs the entire carbon dioxide content of the gas. Hereafter the gas volume is again measured and its volume noted. In order to determine the respective amounts of oxygn and carbon monoxide, the gas sample is first sent through a solution of pyrogallic acid, where the oxygen is absorbed, after which the rest of the sample is measured and then forced through a cuprous ammonia solution, where the carbon monoxide is held back. The rest of the gas which remains after this treatment is practically pure nitrogen.

The apparatus used in the analysis is the Hays Special Gas Analysis Instrument shown in Fig. 1. The apparatus is carried in a metal case (Fig. 5) finished in black and provided with a handle. The burette B,

Exhaust of the Motor

which is surrounded by a water-jacket J, carries a scale and is connected, at its upper end, to a cock G, while a connection is provided at the bottom to permit of establishing a communication between the burette and the leveling bottle L, which normally is placed below the chamber marked CO_2 in the illustration. The CO_2 chamber has two upper outlets, one corresponding by means of a rubber tube to the cock G, while to the other outlet is fitted a short piece of rubber hose, into which fits a glass funnel F. In the connection between CO_2 chamber and cock G is interposed a glass tube filled with metal filings which retain all solid matter contained in a liquid passing through the tube. The cock G has also two other connections, which lead to two vertical glass chambers marked O and CO, which serve for the absorption of oxygen and carbon monoxide, respectively. Each of these chambers corresponds with a glass tube of the same volume on the opposite side of the instrument, and it is on that side that the connections from cock G lead to the tubes. On the side shown in Fig. 1, however, the O and CO chambers are connected through a T-glass tube and some rubber tubing, which is normally squeezed close by the screw clamp S.

The chemicals used for the analysis are seen in Fig. 3. Caustic potash is supplied with the instrument, this material being the most efficacious for the absorption of carbon dioxide. The potash is seen at S and S_1, and it is important that in reordering the potash none should be bought which has been purified by means of alcohol. Pyrogallic acid, commonly called pyro, P and Pl, comes in small tubes, as does cuprous chloride, which is shown at C and C_1. Hydrochloric (muriatic) acid, H, is used in the analysis, because it does not react with carbon dioxide, monoxide or oxygen. At A is shown a bottle with ammonia solution, containing .90 per cent. of ammonia. Like the ammonium chloride, A_1, it is used in the determination of carbon monoxide. The bottle B as well as glass funnel F also play their parts in the process. The aspirator A2 is interposed in the rubber-tube line, about 6 feet from the end of the tube which is attached to the cock G.

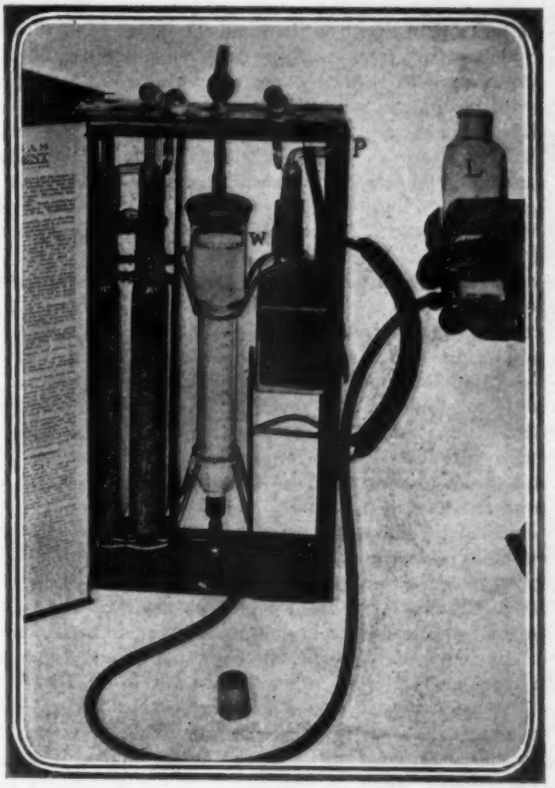


Fig. 4—Filling the burette with acid water. For this purpose the cock is turned open and the leveling bottle raised as shown in the picture. This operation is also used when it is necessary to coax the caustic into the chamber

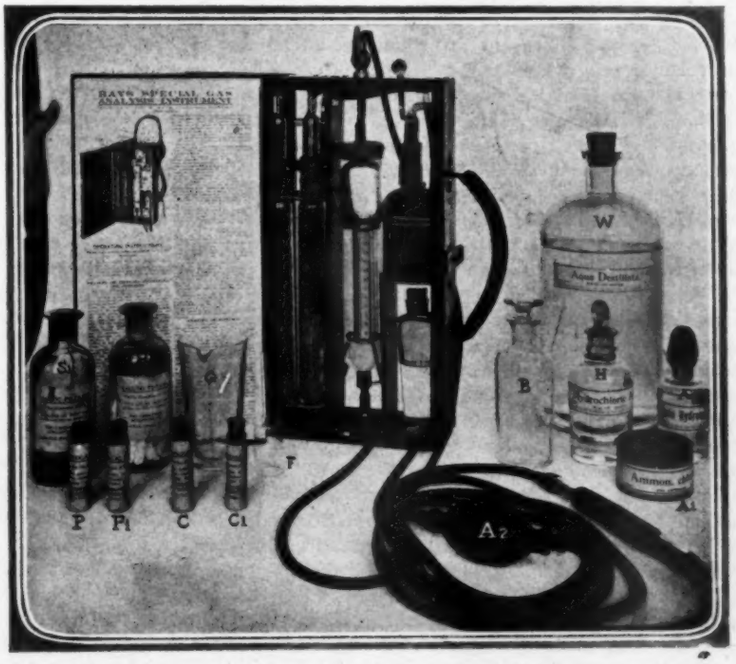


Fig. 3—Line-up of apparatus and chemicals for analysis. Preparations might look tremendous, but the operations are simpler than they seem. Besides muriatic acid and aqua distillata, only caustic potash comes into play when carbon dioxide is to be determined

Fig. 5—View of the instrument when not in use. It is of first importance to remember that the cock should then be closed, and the plug be used to seal up the rubber tube above CO_2 chamber, lest disastrous results are the expectation

Before beginning the actual analysis, the rubber hood H of the jacket J in Fig. 1 is lifted and the jacket filled with water up to the capillary tube T. Then the leveling bottle is filled to about two-thirds with distilled water, after which half a teaspoonful of hydrochlorid acid is added. The leveling bottle should always be closed with the rubber stop furnished therewith, when not in use. The bottle being filled with dilute acid, one of the bottles containing the sticks of caustic potash is filled with distilled water, closed and shaken until the caustic has been dissolved. Then the handle of the cock is brought to a vertically upright position, and the funnel is put in place as in Fig. 1. Hereafter pinch check PC_1—the one next to the CO_2 chamber—is pressed by two fingers, and the caustic having been filled into the measuring glass up to the 3 1-2-ounce mark, is poured into the CO_2 chamber. In case the potash should stay in the funnel and refuse to flow down into the chamber, it will be necessary to use the leveling bottle to attain the end sought. This is done as follows: First release the pressure on the pinch check. Then, after removing the leveling bottle from its compartment, the stop is taken out and the bottle raised. The hydrochloric-acid solution will flow from the leveling bottle into the burette and fill it. When the liquid reaches the height of the capillary tube, Fig. 4, the leveling bottle is held in place and the cock handle turned to a horizontal position. Now the bottle is lowered while the pinch check PC_1 (Fig. 3) is held open with the thumb and forefinger, until all of the caustic has flown into the CO_2 chamber. Then PC_1 is released. Now the instrument is ready for making one or more analyses for carbon dioxide.

The apparatus is placed in a stable position, preferably by hanging it on a nail through the hole in the metal casing. The funnel—or the plug which is put in the rubber tube above the CO_2 chamber when the instrument is not in use—is taken out of the tube, and the stopper removed from the leveling bottle. While the handle of the cock is still in the horizontal position, the leveling bottle is raised about 2 inches so as to drive any potash which may be in the connection between burette and CO_2 chamber back into the latter. The pinch check PC_1 must be held open while this is done. Now the cock handle is turned up vertically and the leveling bottle raised till the level in the burette rises up to the capillary tube. Then the handle of the cock is turned to a horizontal position, and, while PC_1 is still held open, the bottle is lowered slowly until the caustic rises to the top of the metal filing in the tube above the CO_2 chamber.

The apparatus is now ready for the gas sample to be introduced. For his purpose the long rubber tube carrying the aspirator is slipped over the open end of the cock, while a piece of 1-8-inch gaspipe is slipped into the other end of the rubber-tubing line. The gaspipe is inserted into the outlet of the muffler, and the aspirator worked. If this is done after the cock has been opened by turning the handle to a vertical position, the exhaust will pass through the burette and bubble up through the leveling bottle. This should be continued until the operator feels sure all the air has been displaced from the burette, when the cock should be closed by turning the handle to a horizontal position. Then bring the level of the liquid in the leveling bottle to the exact level of the zero mark on the burette. If the handle is turned up to an elevation of 45 degrees the liquid will rise slowly in the burette, its surface being curved downward at the center. When the lowest point of this surface reaches the zero mark the cock is closed. While the liquid flows into the burette the leveling bottle must be raised a little, so as to keep the levels in the burette and bottle the same at all times.

Then, while the pinch check is held open with the fingers, the leveling bottle is raised slowly until the liquid rises in the burette up to the capillary tube. This forces the gas sample into the CO_2 chamber, where all the carbon dioxide is instantly dissolved in the caustic potash solution. Now the leveling bottle is lowered quickly until the level falls in the burette down to the 15 mark. After this lower the bottle slowly until the caustic rises again to the top of the filling in the tube above the CO_2 chamber. When the potash has reached this height release the pinch check and bring the leveling bottle to such a height that the levels of the liquid in bottle and burette fall into the same plane. The number found on the burette at the lowest point of the surface is the percentage of carbon dioxide in the gas sample tested.

Hereafter the rest of the sample may be tested for oxygen and carbon monoxide. For this purpose the respective chambers are filled with the proper reagents in the manner given in the instruction accompanying the instrument when it comes from the maker. These tests, however, take more time than the one for carbon dioxide, and the average automobilist is more liable to make a mistake while undertaking them. Incidentally, they are of less interest than the carbon dioxide determination, because what the engineer and autoist desires is a complete and efficient combustion, or, what means the same, a maximum of carbon dioxide in the exhaust. Therefore, it will be much simpler to work only with carbon dioxide analyses, adjusting the carbureter in one way or another, until the highest carbon dioxide percentage is obtained. This percentage is between 12 and 14 per cent., and on the average a motorist may be quite satisfied to run on a mixture that burns to an exhaust containing about 12 or 13 per cent. of carbon dioxide, because the degree of combustion prevalent in average automobile practice is hardly three-fourths of the one producing an exhaust with 14 per cent. carbon dioxide. At the same time it may be said that when the carbon dioxide content of the exhaust has risen to 13 or 14 per cent. the carbon monoxide therein is a very negligible quantity.

A few remarks respecting incorrect mixtures may not be out of place here. It is well known that gasoline is not explosive, and combustible only if mixed with no less than a minimum of air. This explains the possibility of burning gasoline in a lamp in the same manner as crude oil, and no spontaneous combustion will be experienced unless some of the fuel is permitted to evaporate and mix with the surrounding air. A spark occurring in a body of liquid gasoline contained in a tank will not be efficacious in igniting it, but will result in the most rapid combustion of the fuel if it is in the gaseous state and mixed with oxygen.

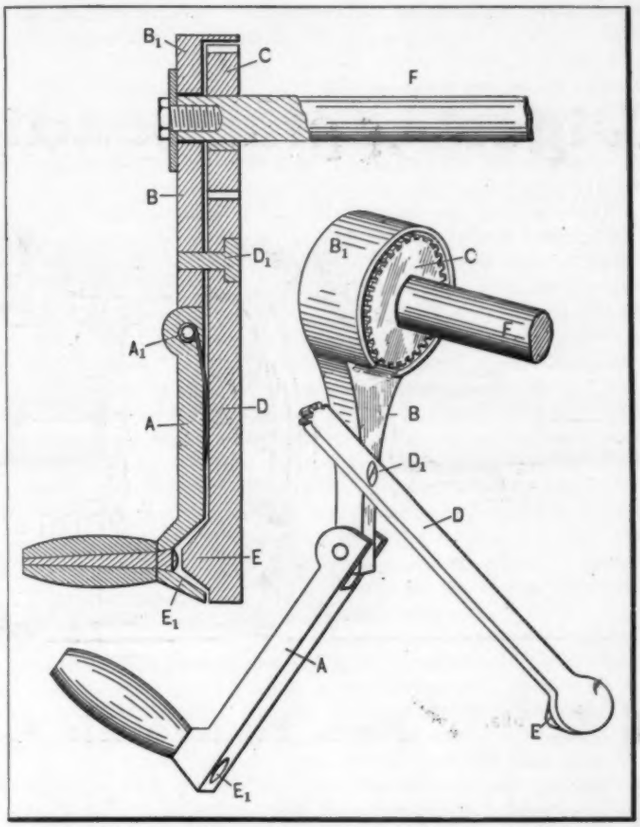
On the other hand too lean a mixture will not burn. Below a certain gasoline content the gasoline-air mixture is incombustible. This is well illustrated by the fact that not infrequently gasoline is spilled in the street and allowed to mix with air; at the same time, there are enough opportunities of igniting this mixture, so that according to the law of probabilities gasoline fires in the street should not be of such rare occurrence as they are in practice. The reason therefore is that the gasoline is rapidly distributed through the air currents always obtaining in a street, so that even a match lighted at a distance of say 10 feet away from the gasoline spilled will hardly ever ignite the same. Whereas in a closed room, such as a garage, the same experiment would undoubtedly result in a serious fire. A similar case can be observed in any city apartment every day. In a well-ventilated room, the gas of a lamp may have been turned on for minutes and plenty of gas might have left the burner; yet, if a match is applied to the burner, only the gas next to it will ignite, and the farther-away portions, which are mixed with a vast surplus of air, will not avail themselves of their opportunity to burn. In this instance, too, unless the room is well ventilated and the gas thoroughly diluted by plenty of air, a highly combustible mixture will be formed and ignited at the earliest occasion.

The apparatus before described is handy enough, and after having become accustomed to work with it by a dozen tests or so, the automobilist who is out for economy will find it a very convenient instrument. The construction is compact, and as long as the cock is kept closed and the glass plug in the rubber tube above the CO_2 chamber when the instrument is not in use, there is no danger of spilling any of the chemicals over the car as long as the glass parts of the apparatus remain unbroken, so that one may keep the analyzer in almost any place at all. It is manufactured by the Combustion Appliances Company, Rogers Park, Chicago, Ill.

British Starting Crank

A CRANK which has been brought out in the English accessory market is described and illustrated with the assurance added that the crank has proved perfectly reliable in practice and is obtainable at a very reasonable price, besides that it may be fitted to any motor crankshaft by varying the bore of the motor shaft extension on which the crank is mounted. The description as given seems to be at variance with the possibilities of mechanics and is rendered in the following with modifications which, it is believed, represent the true construction of the crank. F is the motor shaft extension whose bore is fitted over the motor shaft end, not shown, and secured by set screws. This extension is cylindrical, and to it is keyed the pinion C. The crank arm B is journaled upon the end portion of the extension shaft with its hub adjacent to pinion C and fitting over it as a casing by means of a circular flange except where the crank arm joins the hub. A screw bolt holds a washer against the extension shaft end, thereby securing the crank hub B1 while leaving it free to turn around. The free end of B is hinged to the piece A which forms the outer end of the crank arm with the usual handgrip, and the spindle which carries the grip is formed on the opposite side with a conical recess E1. D is another portion of the complete crank arm and is pivoted in B at D1. Its short end is provided with teeth which engage pinion C and its outer end is formed with a conical projection fitting into the conical recess E1 in the end of A. A spring at the hinge joint A1 holds A away from D and E1 disengaged from E unless the hand of the operator starting the car exerts an opposite pressure upon the grip.

When it is desired to start the motor, this pressure is brought to bear, and the crank is turned in the same manner starting cranks are ordinarily turned. In case of back fire, however, if the pinion C is rotated in the reverse direction, the shock of its teeth against the teeth on the short end of D releases the engagement at E and E1 and throws D around the pivot pin at D1, thereby leaving the pinion and the motor shaft extension free to rotate, while the crank is released. Apparently the rapidity of motion caused by the pinion acting on a very short lever has much to do with throwing the conical joint at E out of action, while the angle of the cone in conjunction with the spring at A1 contributes to throwing A forward. The device can of course be mounted on the motor shaft with the customary clutch and release spring in addition to the features described, so that the successful starting of the motor will not throw the parts out of their normal assembled relations every time the crank is used.—From *The Motor*, Sept. 23.



Safety starting crank recently introduced in England

Harking Back a Decade

JUST ten years ago the *Motor Review*, the forerunner of THE AUTOMOBILE, published the following:

Alexander Winton created a new world's record for the mile on an oval track last week when he negotiated the Grosse Point track in 1:06 2-5. The best previous was Fournier's 1:06 4-5, made on Empire City track, New York. This record was made in the third mile of a 10-mile trial and was equaled in the seventh mile.

The list of exhibitors at the second annual display of motor vehicles, which will open in Madison Square Garden on November 2 under the auspices of the Automobile Club of America, includes the names of forty-one makers of automobiles and forty-two of accessories. Against the protests of the National Association of Automobile Manufacturers, the promoters decided to allow French cars to be exhibited.

Rochester, N. Y., is experimenting with the automobile for collecting mail, and its work as compared with that of the horse-drawn vehicles then in use showed a time saving of 61 per cent.

The Automobile Club of America pledged its support in the work of enforcing the new speed ordinances of Long Island. Secretary S. M. Butler, of the A. C. A., is especially prominent in the matter.

The necessity for the formation of a national association in the interest of the users of motor vehicles is editorially dilated upon and attention is called to the fact that the Automobile Club of America has appointed a committee to consider the matter.

The Automobile Club of New Jersey is arranging to hold a hill-climbing contest on the famous Eagle Rock Hill on election day.

Boston announces its first automobile show. It is to be held in the new Automobile Building during the ten days from November 15 to 25. Admission will be free and after the regular show a permanent exhibition will be conducted.

New York motorists are congratulating themselves on the early completion of a specially built speedway for automobiles. It follows the windings of the Bronx River for 1 1-2 miles and will accommodate six cars abreast.

The Long Island Automobile Club is preparing for its race meet scheduled for November 16. In the entry blank gasoline carriages are divided into three classes: under 1000, between 1000 and 2000, and over 2000 pounds. Steam vehicles of all kinds are to compete in one class, as will electrics.

Two destructive fires marked the week. One, at the Chicago plant of the Woods Motor Vehicle Company, caused a loss of $75,000. The other, at the new establishment of the New York Belting & Packing Company, also caused a large loss.

Digest of the Leading Foreign Papers

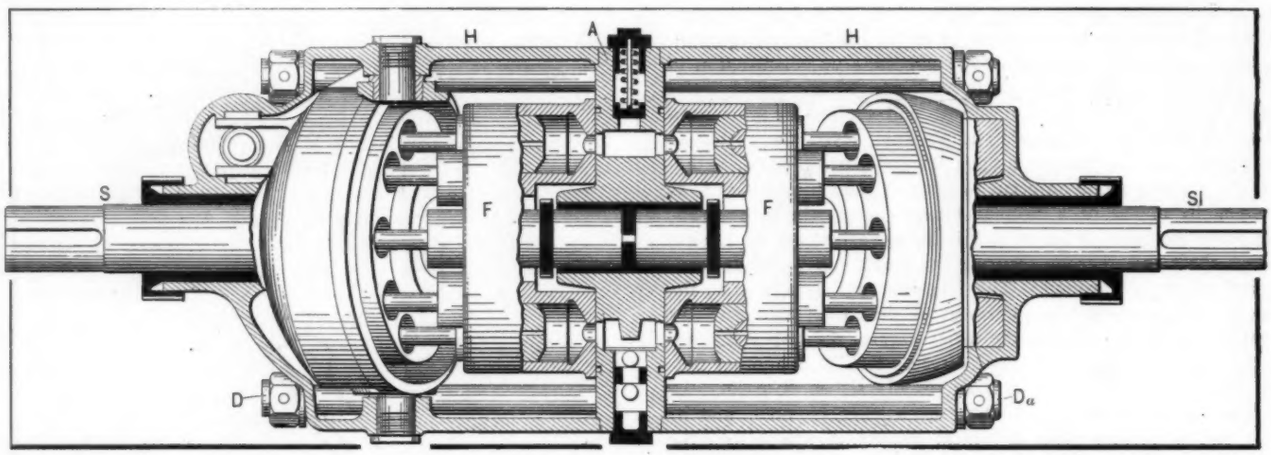


Fig. 1—Delaunay-Belleville hydraulic change-speed set in which oil is used

New Hydraulic Change-Speed Set

THE Williams-Janney hydraulic transmission and change-gear mechanism, which has been used for the maneuvering of turrets and large ordnance on board of warships, has been adapted to automobile purposes by the Delaunay-Belleville Company, of France, and is described by C. Faroux in a review of the foremost hydraulic transmissions, as these have become known through patents or practical applications. In all of them the principal object is simplification of the driver's control movements, the avoidance of gears and such reduction of the vehicle speed that a motor of moderate size shall be sufficient for moving a heavy load under the most difficult conditions of haulage so long as road adhesion is obtainable. The leading features of the mechanism are as follows:

The casing, Fig. 1, is formed of halves H bolted together against a central transverse plate A, called the distribution plate, in which there are two crescent-shaped slots (see Fig. 2). The motor shaft S enters one end of the casing through a packing box and abuts against a thrust block in the middle of the distribution plate, where a bushing in bearing metal is provided, and the driven shaft S, also abutting against this thrust block, extends through a long-packed bearing at the other end of the casing. Except as noted in the following, the parts are symmetrically alike on both sides of the central plate. A drum F keyed to the motor shaft adjacently to the central plate, is provided with nine cylindrical bores which register partially with the crescent-shaped slots in the central plate, except that each of the cylinder bores when at the top of the circle of rotation must register with the solid portion of the plate between the slots. In this drum nine reciprocating pistons, Fig. 3, are moved to and fro by means of piston rods actuated by a plate mounted upon the motor shaft by a cardan joint and held in an oblique relation to the motor shaft by its confinement in the ball-bearing ring, with large end thrust bearing balls in which it rotates. The adjustment of the cylinder drum on the motor shaft by means of rounded splines permits a certain play, two helical springs secured to a pin through the motor shaft holding one end of the drums against the central plate when the mechanism is started. When the oil, which fills the whole casing, is under pressure in the cylinders, the drums D and the central plate are automatically held in contact because the interior pressure exceeds the exterior by virtue of the piston area exceeding that of the cylinders. The ball-bearing plate, on the motor side of the mechanism, may be placed at any angle between 90 deg. and 70 deg., as the ring or cup in which the ball bearings are mounted may be turned around pivot pins journaled in the casing by means of a control device consisting in a threaded rod actuating a worm. The adjustment screw passes through a packing and is operated by a lever from the outside. The ball-bearing plate on the driven side, on the other hand, is caused to rotate in a ring whose relation to the shaft is fixed permanently at an angle of 70 deg.

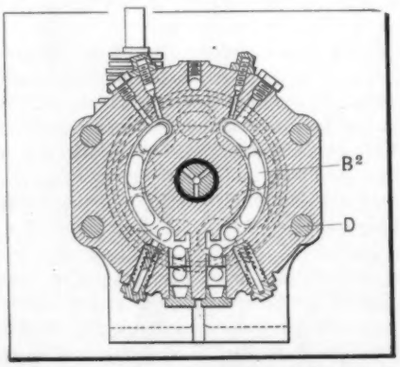


Fig. 2—This is an illustration of the central plate A, shown in Fig. 1, and shows this plate as seen from either end of the change-speed set. The two crescent-shaped slots spoken of in the text are seen, as well as the solid portion of the plate between ends of these slots

In operation, when the motor shaft rotates the drum on the motor side, the ball-bearing plate, rotated in its oblique ball bearings by the cardan joint and acting against the ends of the piston rods, drives the pistons in or out of the cylinders accordingly as the piston rod's attachment in the ball-bearing plate moves obliquely toward the distribution plate or away from it, and these movements of the pistons on the motor side of the mechanism are transmitted through the oil in the cylinders to the pistons on the driven part of the mechanism, this piston movement in turn causing the driven ball-bearing plate to rotate in the direction which will make room for the piston movement similarly as a sailing vessel is driven forward, following the line of smallest resistance in the direction of its keel by a side wind, though the latter acts at right angles to this direction. The driven ball-bearing plate, of course, carries with it the cardan joint upon which it is mounted and thereby the driven shaft as well as the cylinder drum on the driven side. The speed of this rotation of the driven shaft is approximately the same as that of the motor shaft only if the motor

pistons are allowed full stroke, as in that adjustment of the ball-bearing plate on the motor side which is indicated in the illustrations. But if this plate is raised to a position more nearly parallel with the distribution plate each of the motor pistons will displace less oil for each revoution of the motor shaft, and the rotation of the driven ball-bearing plate will be correspondingly retarded, since the pistons on the driven side must always move with full stroke.

To effect a reverse movement of the driven shaft it is only necessary to tilt the ball-bearing plate on the motor side in the opposite direction, as this will reverse the piston movements and therewith the direction of the driven shaft's rotation. The solid portion of the distribution plate between the two crescent-shaped slots, Fig. 2, corresponds to one of the two periods in each revolution of the mechanism when a given angular movement in the rotation of the ball-bearing plate on the motor side is represented by only a negligible amount of travel for each piston, and the interruption of the oil flow through the slots at this point therefore serves to prevent uncertainty in the direction of motion communicated to the driven ball-bearing plate.

It is noticed that the only part of the oil which works in this hydraulic transmission mechanism is that contained in the cylinders and in the slots of the central plate A. The rest is not under pressure, but serves to lubricate all parts and to supply losses due to leakage, a reservoir with suitable valve passages to the casing keeping the latter full and taking care, as well, of expansions and contractions due to changes in temperature which may affect the oil and the casing unequally. Oil channels through the piston rods and pistons, which, however, are almost closed where the end of the rod abuts against the bearing socket in the ball-bearing plate, serve to remedy irregularities which may arise if some of the working oil in the cylinders is driven out under excessive pressures. These may occur in case of very heavy loads, when the ball-bearing plate on the motor side is adjusted to a low-gear position nearly parallel with the drum and the central plate. There may then be some escape of working oil between the pistons and the cylinder walls. It is evident that the walls of the central plate need not be parallel or close together. The space represented in the slots of the central plate may take the form of a long connecting tube and the driven part of the mechanism may be apart from and at right angles with the motor part. In principle the construction (and the patent) is relatively old and only the adaptation to it of modern ball bearings, highly accurate workmanship and a number of minor refinements, some of which may be discerned in the illustrations, have rendered it practical.—From *Bulletin de la Société pour l'Encouragement des Industries Nationales* for May and *La Vie Automobile,* Sept. 23.

No Conspicuous Aeroplane Improvements Shown in France—At the competition for military flying machines taking place at Rheims, in France, the principal innovations in features of construction are the offset planes on the Maurice Farman biplane (so that the upper plane is not vertically above the lower one), and the improved starting and landing skids on the Coanda machine. For the military tests which relate largely to the carrying of loads, safe landings and starts from difficult—confined or rough—ground, the biplanes are considered much superior to the monoplanes. For speed the reverse is considered to have been established as true, for the present. Nearly all the motors have a considerable excess of power, to be used for emergencies only. In other words, it is recognized that no internal combustion motor can be normally operated at the extreme of its power capacity without incurring too many chances of breakdowns. The motors shown, in addition to the well-known Gnome, Renault and Anzani models, are the Clerget, the Chenu, the Dansette, which are modified automobile motors, and the Canton-Unne with radiating cylinders. To rise from a ploughed field by the shortest run and to reach an altitude of 500 meters in less than 15 minutes are the two performances under competition.—From *L'Auto,* October 13.

Bends of the road have become dangerous to night-drivers since tar has been used as a dust preventive. Formerly the roadbed shone white in the light of the headlights, and, in case of a bend, the white streak was apparently interrupted fifty or sixty yards ahead, warning the traveler, but now the highways are black; the tarred surface simply devours the beams of the lamps and the metalled track seems to merge imperceptibly into the grass verges, and even the hedges that bound the roadway. When an abrupt turn is approached there is great difficulty in realizing the fact.—From *The Royal Automobile Club Journal,* October 13.

Where rain-water drains from tarred roads into fishing preserves, especially those in which salmon or salmon trout are hatched, great injury to fish life is said to result. The *Fishing Gazette* of July 8 reports a complaint from the Northern Anglers' Association relating instances in which damage was due to this cause and citing one case in which 17 pounds of poisoned eels were collected.—From a discussion in *The Royal Automobile Club Journal,* October 13.

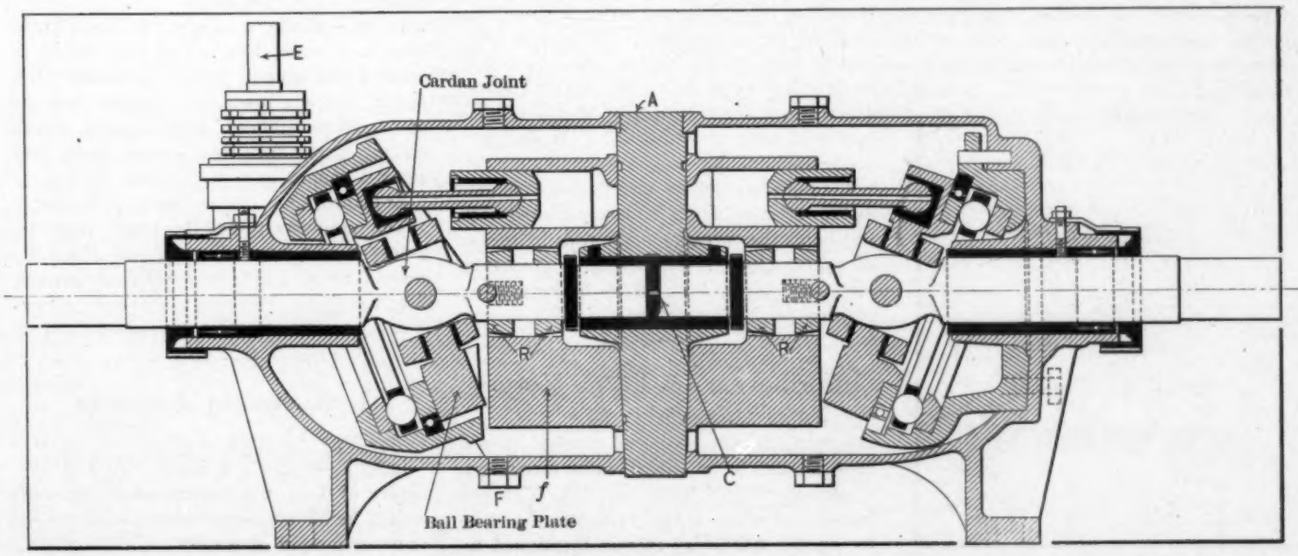


Fig. 3—This is a vertical section of the Delaunay-Belleville hydraulic change-speed set for use on trucks and lighter commercial vehicles. The central plate A is seen, also the ball-bearing plates mentioned so frequently in the text. The sets of pistons which work in cylinders in the drums D can also be seen, as well as the two cardan or universal joints spoken of

Letters Answered and Discussed

Has Carbureter Troubles

Editor THE AUTOMOBILE:

[2,889]—I am a subscriber to THE AUTOMOBILE, and would like some information regarding my car. I have a 30-horsepower automobile with a double-ignition system and single set of spark plugs. The car pulls very well on level ground, but as soon as I get on a hill the motor speeds up fairly well until I open the throttle wide, when it will suddenly stop without missing an explosion otherwise.

I have had the carbureter cleaned and adjusted for gasoline and air without results. I have also had the float shellacked and the gasoline pipe examined, but the carbureter will leak a short time after it is stopped. I have also had magneto points cleaned, and the other parts of the ignition system seem to be all right. F. H. C.

New Village, N. J.

The carbureter chokes when required to give a good supply of air when it is most needed. This can be remedied in two ways. First, by buying a new carbureter which has better auxiliary air adjustments; and second, to fit an air adjustment on the intake pipe which can be opened and closed by hand from the seat.

Testing Spark Apertures

Editor THE AUTOMOBILE:

[2,890]—I have had considerable trouble with the ignition system on my car and have after considerable time come to the conclusion that it is due to the fact that the gaps in the spark plugs of two of the cylinders are too wide. How is it possible to test them for the correct distance between the two points?

I am sure the trouble is merely in the spark plugs, for if I take the other plugs out and put them into these cylinders, they will fire all right. I was about to purchase new spark plugs, but thought that I would ask you if it would be anything besides the spark plugs which would cause trouble of this nature. T. T. T.

Hot Springs, Va.

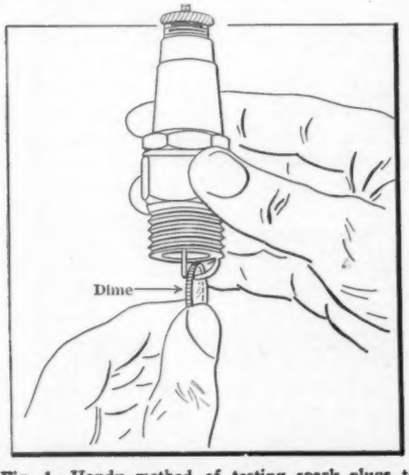


Fig. 1—Handy method of testing spark plugs to see if space betwen the spark plugs is of the proper width

It is a very simple manner to squeeze the spark-plug points together with a pair of pliers. A good method of testing the spark plugs is to take a dime as shown in Fig. 1. If the gap is too large, the dime will pass between the two points.

Locking Turnbuckles

Editor THE AUTOMOBILE:

[2,891]—Would you kindly tell me if you know of any method of locking turnbuckles so that the vibrations due to the engine or road will not alter the adjustments upon them?

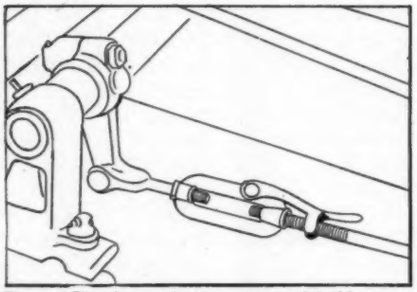


Fig. 2—Showing a simple method of locking turnbuckles

The turnbuckles on the brake equalizers come out of adjustment after I have been running for a time, and if there was some simple method of locking them which I could install upon the buckle myself I would greatly appreciate it if you would tell me how it is done. B. BUNN.

Carthage, N. Y.

A simple method of installation is shown in Fig. 2. The clamp is merely turned back and holds the threads on the rods by means of corrugations in its jaws. A spring or other device may be fitted to keep it in position.

Information on Farm Motors

Editor THE AUTOMOBILE:

[2,892]—In your issue of October 19 you have an article on motor farm machinery. I refer to the article on page 674. Can you inform me where I can get descriptive matter on the machinery therein mentioned together with prices. I am interested in motor machinery for farm use and will be greatly obliged for any information you can give me. Very sincerely yours,

Fitchburg, Mass. THOMAS CASEY.

The C. I. M. A. tractor is made by the International Harvester Company of France, just like those made by same company here. With regard to the others we would refer you to Association Française de Moto-Culture, 51 rue de Lancry, Paris.

Wants Gasoline Information

Editor THE AUTOMOBILE:

[2,893]—Would you be so kind as to answer the following questions:

(1) What grade of gasoline should I use to get the best results?

(2) How is it possible to determine the grade of gasoline from a given sample?

(3) What is the wholesale price of the different grades of gasoline?

Muscoda, Wis. C. R. PICKERING.

(1) The best results would be obtained with the lightest grade of gasoline, but excellent results are obtained with gasoline which registers 76 per cent. on the hydrometer test—the best grade of gasoline now in common use on the market.

(2) By means of the hydrometer, which is a very cheap instrument, and on sale at any supply house.

(3) The wholesale price of gasoline varies. At the present writing it is quoted at 7 cents per gallon in wooden barrels for 76 per cent. gasoline.

Repair Broken Crankshaft

Editor THE AUTOMOBILE:

[2,894]—Being a reader of THE AUTOMOBILE, I would like to ask if it would be possible to have a broken crankshaft repaired that was made by a concern now out of business. These people have ceased making parts for their automobiles and hence I cannot have it replaced.

Bradford, O. ROY L. MILLER.

The crankshaft may be easily repaired, unless it is a hopeless wreck, by the autogenous or oxy-hydrogen welding process. Any firm who does this work will tell you if it is possible to repair your crankshaft.

Kerosene in Radiator

Editor THE AUTOMOBILE:

[2,895]—Would you kindly tell a weekly reader of THE AUTOMOBILE what the result would be if kerosene were placed in the radiator instead of water?

Findlay, O. FRANK CONE.

The result would be that you would be

paying for your cooling fluid instead of getting it for nothing; that it would only cool your engine 87 per cent. as well as the same quantity of water; that various gases would be given off which would issue from any loose connections and that it would leak very easily. In short, it would not be very advisable to use it.

Wants Heavier Flywheel

Editor THE AUTOMOBILE:

[2,896]—I would greatly appreciate it if you would answer the following questions through the columns of THE AUTOMOBILE:

(1) Is it safe and possible to increase the weight of the flywheel on my car, say about 15 pounds, without danger of damage to the engine?

(2) Where can I have aluminum castings made? A. W. MILLER.

Bound Brook, N. J.

It is not very easy to place additional weights on the flywheel owing to adjoining parts and other complications. But the counter-weights illustrated in Fig. 3 may be bolted on the cranks. If this is done the weights must be carefully distributed and arranged so that the balance of the engine will not be destroyed. In a four-cylinder motor with the cranks cast in pairs, there will be, as a rule, but three main bearings. In this case the weights should not only be distributed evenly among the cranks, but should also be balanced on either side of the center main bearing. The weight should add up to the total required. It must be remembered that when they are bolted so closely to the center of rotation, a heavier weight may be fitted than when they are at the rim of the flywheel. Fifteen pounds at the distance of a foot from the center of the shaft would be equivalent to 90 pounds at 2 inches from the center.

Any foundry will make the castings for you. If you consult a trade directory you will find the names and addresses of several.

Wants Wiring Diagram

Editor THE AUTOMOBILE:

[2,897]—I have a 12-volt battery set, and wish to light two 6-volt lamps and also start the motor on the same batteries with four-section coil. Would you please give wiring diagram? SUBSCRIBER.

Indianapolis, Ind.

The wiring diagram is given in Fig. 4. As the coil will probably be wound for 6 volts, a 6-volt wire will have to be led from the battery set, on a separate switch from the lamps.

Vanadium as Scavenger

Editor THE AUTOMOBILE.

[2,898]—The controversy with Mr. Lake has already taken up so much of your space that I am reluctant to further encroach. Mr. Lake assumes that the prominent metallurgists I named as investigators of vanadium steel "have doubtless accepted Mr. Smith's statement that vanadium was a powerful scavenger." Possibly they have, although there is no evidence in any of their writings to that effect. My contention is not that vanadium does not possess scavenging value, but that this is not its main mission, and there is absolutely no evidence in any printed matter on vanadium by any competent metallurgist "that its main mission is as a scavenger." Mr. Lake says that of the metallurgists mentioned, J. Kent Smith was the only one who has specialized on vanadium, and that the property of vanadium as a scavenger "was the only statement that Mr. Smith emphasized." To refute this latter assertion I quote from the discussion on an address he gave before the Association of Licensed Automobile Manufacturers in New York City March 7, 1907:

"MR. ELWOOD HAYNES.—I would like to ask Mr. Kent Smith one or two questions. Secondly, whether it is essential for any of the vanadium to remain in the vanadium steel in order to give the special properties of vanadium steel?

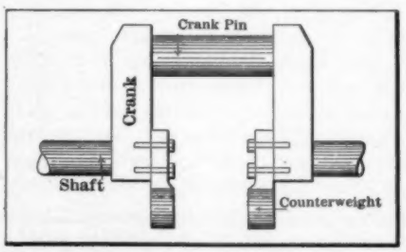


Fig. 3—Illustrating how counterweights are bolted on cranks

"MR. KENT SMITH.—With regard to the question as to whether it is necessary for vanadium to remain in the steel, I answer that strongly in the affirmative. Vanadium is an 'elusive' element. If there is any oxide left in the steel the vanadium will scavenge it out; but vanadium is an expensive scavenger. You want your vanadium left in to both statically intensify and to give dynamic quality to the metal."

Dr. Mathews' very favorable comments on vanadium steels before the Franklin Institute were made more than a year later than his talk with Mr. Lake, and after he had the opportunity to investigate and test out vanadium steels himself. Possibly Dr. Mathews' criticism was directed more towards Mr. Lake's handling of the subject. Dr. Mathews' opinion of vanadium steel is still the same as it was in 1909 when he delivered his lecture at the Franklin Institute. Mr. Lake stands alone and opposed to the experience of the steel makers who have made thousands of tons of vanadium steel, when he says that "its main mission is that of a scavenger." When he says, "I might say I know of none who have said that the main mission of vanadium is not that of a scavenger," he seems to be ignorant of the literature on the subject, for there is absolutely nothing published to warrant such a statement.

GEORGE L. NORRIS.

Pittsburg, Pa.

Broken Valve Stem

Editor THE AUTOMOBILE:

[2,899]—I have recently been troubled with an inlet valve that broke on the road. Had it not been for a near-by shop I don't exactly know how I would have got home. Can you tell me of a way of repairing such damage on the road? J. O'DEA.

Jamaica, L. I.

You could have reached home by closing the inlet port whose valve is broken. It is also advisable to close the exhaust port to prevent scale and dirt from being drawn in through the exhaust pipe. The ports may be closed with a piece of thin sheet metal placed between the pipe and motor; or in some cases the valve lifter can be removed and the valve blocked down by removing the cap over it and placing something between the cap and the valve, putting the cap in place again to hold the valve down. It is generally better to have an opening into the cylinder after the ports have been closed, such as may be made by the removal of the spark-plug. After fixing this the engine will run on the remaining cylinder.

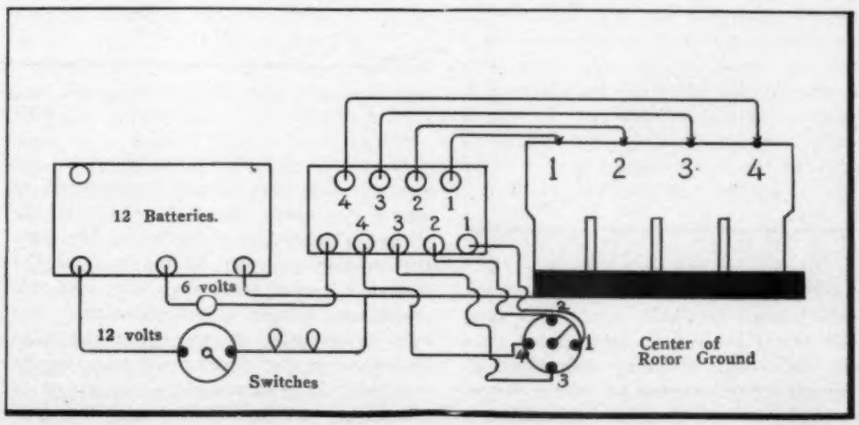


Fig. 4—Wiring diagram showing how to light two 6-volt lamps and start the motor on the same batteries

Little Bits of Motor Wisdom

Pertinent Pointers of Interest to Repairman and Driver

MEASURING THREADED PIECES—In the replacement of parts it often becomes necessary to measure the threading on a pipe or other part of the mechanism in order to properly describe to the maker the part desired. It is not always the case that a repair will be made by the service department of the company from which the vehicle was purchased, as there are not

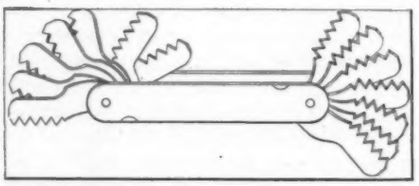


Fig. 1—Handy tool for measuring number and depth of threads

many people who maintain repair stations at distant points. In such cases the part will have to be sent for, and the long delay which accompanies the delivery by express or freight of heavy parts will have to be sustained. In many cases what would be a very simple and quick replacement for the service department or factory becomes a matter of very serious delay in the case of a person who is on an extended tour which carries him far from a place where speedy repairs or assistance could be expected.

The tour, even though it be extended, would have to be very exceptional if it was out of fairly short reach of a machine shop or a plumbing establishment. It might not be possible to reach such a place with the automobile in case it should have been completely disabled; but it would not be impossible to telegraph to the plumbing shop or machine establishment the nature of the piece required and have them be busily occupied in making it while the owner of the car either takes the train to the place of manufacture or awaits its arrival by express. If this is possible the wait will be merely one of hours for the repair instead of one which might necessitate an interval of several idle days.

It is not always possible for the amateur tourist to describe the part which he needs in language which is intelligible to the trained mechanic, who has a technical name for every contrivance upon which he works or every part which he turns out. But with the aid of the instrument shown in Fig. 1 the average car owner can, without an extended study of machine shop practice and its accompanying details of technical nomenclature and other stumbling blocks in the way of the very excusably uninitiated, at least tell the thread dimensions on a threaded piece of material which needs replacement. A small tool of this nature is extremely handy, and this alone goes far in justifying it a place in the repair kit of the traveler who is going to make an extended tour, even if he starts out with a strong determination to cut down all excess baggage and weights which might interfere with the comfort of the passengers. But when the claim for space in the kit of the tourist is backed up by the fact that it might prove a friend in need, when the car is far from headquarters, it should at least be carefully considered before being thrown into the discard.

To measure the threads, the different leaves of the instrument are opened in the same manner as the blades of a pocket knife, and successively tried in the manner depicted in Fig. 2 until the proper blade is found. The number of teeth to the inch and the depth of the thread are marked upon the leaf of the tool and may be read off very easily. These dimensions are all that is required besides the specification of the shape of the thread, whether it is of V shape or whether it is square.

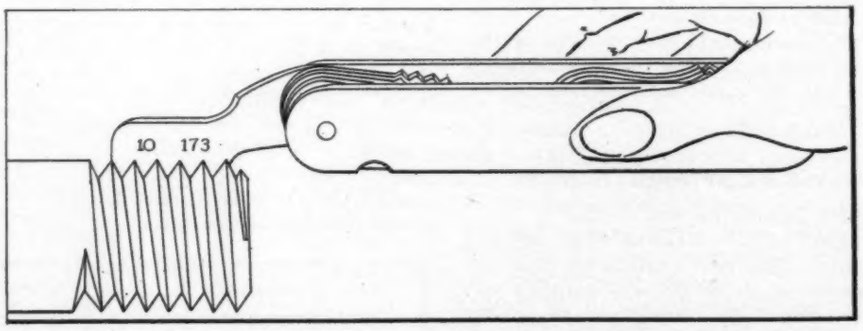


Fig. 2—Showing the manner of measuring a threaded bolt with a pitch gauge to ascertain size and depth of thread

If the style of thread be known to the operator all that would be required in amply describing the part as far as the thread is concerned would be to determine the number of threads to the inch by means of a steel rule or by any other rule which may happen to be convenient. The rule is laid upon the threads in the manner shown in Fig. 3 and the threads can be counted. In measuring the threads it is best to put the inch marks upon the apex of the thread instead of attempting to measure the thread by putting the inch marks from root to root.

In case it is desired to measure the thickness of the shaft at the bottom of the threads it will be necessary to calibrate it by means of special calipers, called thread calipers, which are made for this special purpose—Fig. 4. The art of amply describing mechanical parts in language which will be familiar to the shop man is not a simple one to acquire. This is more particularly the case because localisms take the place of the true names of parts, and it is almost an impossibility for a machinist to understand all the terms of another who comes from a distant shop. In no case is this illustrated better than with the draftsmen of the different large machine shops in the country. A draftsman changing from one concern to another will often be put at practice work for the space of one or two months until he will have perfectly mastered the style and terms used in connection with the work at his new place of employment.

If this is the case with men whose profession leads them to study the delineation of mechanical parts and their various necessary dimensions it is very evident that it will necessarily trouble those to whom the more intricate details of the work in hand are unfamiliar. It is for this purpose that special instruments, with which to determine the necessary and standard dimensions, are required. It may be the case that they will not be required once in three years, and again circumstances may be such that they will be found of frequent use. Standardization is only of recent years finding its way into the mechanical world, and confusion still reigns to a slight degree, although conditions are far better so far as interchangeability is concerned than they were a decade ago.

It is possible for the car owner who is equipped with these small but useful devices to go long distances with a feeling of security which springs from the knowledge that in case an accident should happen he is at least prepared to get out of it as gracefully as the circumstances will permit, and that the delays which accidents entail will be reduced to a minimum. It is not to be recommended to carry about a quantity of loose material which generally receives the ignominious appellation of junk, but the small articles which may save trouble should be well considered.

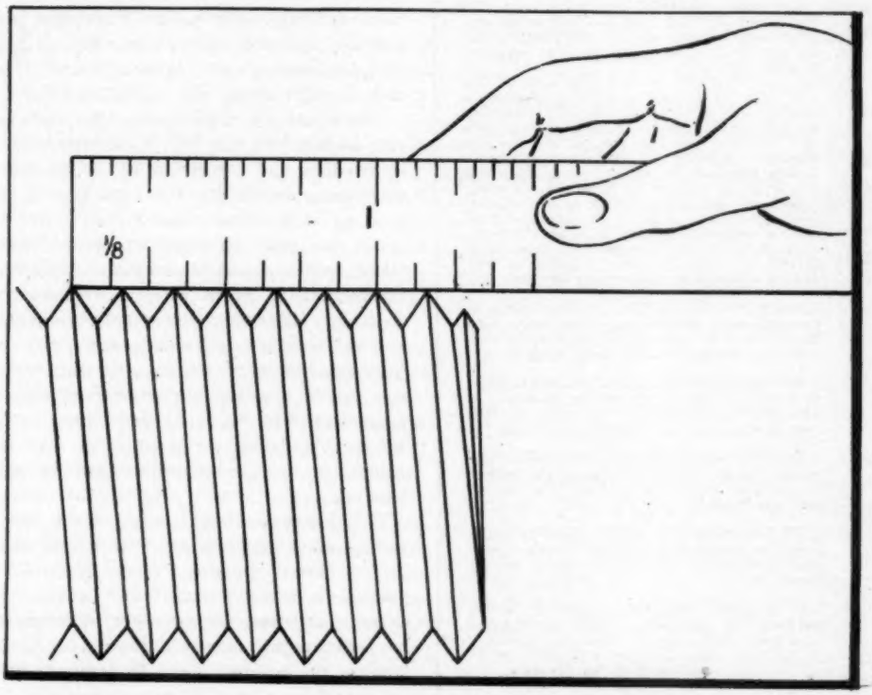


Fig. 3—Showing proper way to ascertain number of threads to the inch on a bolt

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EXAMINE TOOLS BEFORE STARTING—Besides carefully going over the finish of the car to see that it will do its owner credit on little trips around the country, it is extremely advisable to examine into the condition of the tools which are carried before starting out. There is no possible way of foretelling the conditions which may arise upon a trip even though it be of short duration. The best of cars will develop small weaknesses or derangements which may be readily cured by the use of the most familiar tools. If these tools are not in a fit condition to perform their work these small incidents will develop into annoying features which will spoil the pleasure of the tour on the most pleasant of days.

The chief enemy of tools is rust. Moisture, with its accompanying evils, will find a means of access to the tool kit if it is not very carefully sealed against the inroads of this enemy of most metals. A small coating of good oil, which can be placed so thinly on the metal that it will be hardly perceptible, will protect a tool to such an extent that the little trouble which it involves will be too small to consider. The oil may be placed upon a cloth in such a way that the cloth will be saturated. If the tools are then wrapped in the cloth they will be very safe from anything short of a deluge.

It is remarkable how tools and other metallic instruments subject to rust may be ruined by the moisture carried in the air, especially near the seashore or in other places located near a large body of water, and hence carrying in suspension a great amount of aqueous vapor. In case the machine is to be left standing for any length of time in a neighborhood where it is likely to be exposed to the sea air, proper precautions should be taken not only to keep the tools in good condition, but also the other parts of the car which are not protected by paint or some other preparation to eliminate the possibility of oxidation.

The tools in a garage which is located in a damp climate will also require a considerably greater amount of care than those kept in a place which is high and dry. For this reason these tools require frequent attention and care in order to keep them in first-class shape. The cutting edge of a sharp tool, when examined beneath a microscope, will be seen to consist of a number of serrations similar to the teeth of a saw. When the edge is attacked by rust these small teeth are filled by the particles which gather upon the cutting edge of the knife or chisel, which is thus practically ruined. If the blade of the tool is protected by an oil or some other preparation which will defeat the effects of moisture the life of the tool will be greatly prolonged, and the necessity for a rigid examination at the start of every trip will be removed at least to a large extent.

LOOSE EXHAUST MANIFOLD—A peculiar wheezing sound which at times will almost approach a whistle may often be heard issuing from the motor. A search will often be made without results on account of the concealment of the source of trouble. It will usually be a safe guess that the sound issues from a point in the exhaust line where the piping has opened into a leak. As the gas under a pressure of 30 pounds, or thereabouts, rushes past the opening, a small amount passes through the opening, giving vent to the sound, which will often prove most elusive.

If a leak is found in the intake line it is not accompanied by the same noisy features that will insure detection of leaks in the exhaust line, but will be accompanied often by the blow-backs occasioned by a mixture which is too weak. The suction of the engine will naturally draw a quantity of air through the opening, thus diluting the charge and giving rise to the symptoms generally accompanying the lean mixture.

The chief cause of leakage in the exhaust line is the vibration of the engine, combined with the crumbling of the gasket, which keeps the joints tight while it is in good condition. In spite of the fastening which holds the flanges tightly together the constant shaking of the engine, which will be present, no matter how well balanced it may be, will cause the two flanges to work upon each other. This, combined with the high temperature present at this point in the line of the engine, will cause the packing or gasket to harden and eventually to crumble as the length of time it is submitted to wear increases.

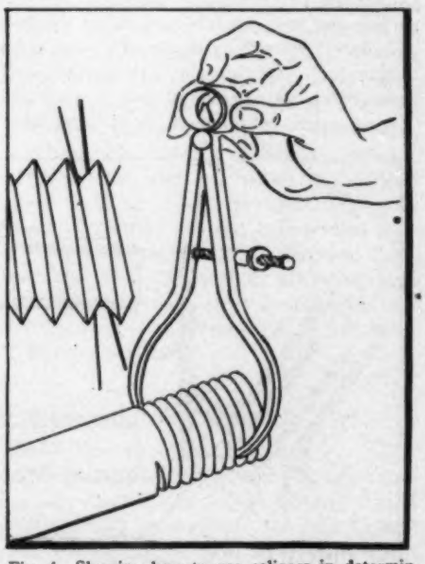

Fig. 4—Showing how to use calipers in determining the dimensions of thread

My Best Automobile Repair

Some Quick Repairs Made in the Garage and on the Road

Temporary automobile repairs made by the driver or owner while on the road and permanent repairs made in the garage after the run is over, are interesting to all automobile owners.

It may be a spring leaf has broken; a shackle bolt or strap may break; a steering tie rod is bent; the car skids into a curb and bends a steering arm or the starting crank; a throttle or magneto connection breaks owing to vibration; a radiator leak is started by a stone or some other means; a leak in the gasoline tank is discovered; there is a small hole in the gasoline feed line; a brake facing may burn out; a brake connection breaks; a front axle gets slightly sprung; a clutch starts slipping, or any one of a thousand things may happen.

Every automobile owner is interested in knowing how repairs have been made, how long it took to make them, how much they cost, and by whom they were made.

We want you to write in simple language in a letter what repair of this nature you have had to make, how you made it, how long it took you and how much it cost.

You can make with your lead pencil one or two rough sketches indicating the broken or damaged part and showing how the repair was made.

The experience of each reader is interesting to every other reader. Analyze your past experiences and send in one or two of them.

Give your name and address, legibly written. If you do not want your name to appear, make use of a nom de plume.

Editor THE AUTOMOBILE.

Had Broken Steering Column

EDITOR THE AUTOMOBILE:

In accepting your invitation to relate road experiences, the writer has selected a case which was quite serious, although it may not be classed as a "road repair" in the strict sense of the term. The repair was, however, made 225 miles from home and with such facilities as were available.

The accident, which happened on a very sandy stretch of road in Wisconsin about 3 miles from the nearest town, consisted of the steering column breaking off short and complete, carrying with it all control.

This steering gear (Fig. 1) is of the screw and nut type, and the screw has an integral extension 3/4 inch diameter extending about 4 inches into the lower end of shaft of steering wheel, and pinned to same by means of two 1/4-inch taper pins, B and C (Fig. 2). The extended portion of screw broke through first pinhole C, as indicated in Fig. 2, the holes being through center of shaft.

Upon examination of fracture it was found to be an old break which was continued to destruction, as shown at A.

The balance of steering gear was removed from car, which was left at side of road, and carried back to the town through which we had recently passed, in the hope of finding something that looked like a machine tool. In this the writer was partly successful, as a country tinker shop was found which contained a small lathe which would at least revolve. The man in charge of this place granted permission to use this lathe; thereupon, the gear was disassembled and the broken member drilled, as indicated in Fig. 3, and a piece of 3/4 common round iron G inserted and pinned in screw, as shown at I and I. These pins were ordinary wire nails. The other end was secured as before, except that straight pins, consisting of 1/4-inch round iron, were used, nothing else being available.

The whole was then reassembled and carried back to the car (on foot) and placed in position and connected up, the journey then being resumed. The total time occupied was 4 1/2 hours, cost $2.70.

For the first 100 miles no chances were taken, and no avoidable strain put upon the repair, but as there was no evidence of weakness, confidence gradually returned, and car was run continually for 3 months with this temporary repair, and when same was finally removed for permanent repair, as indicated in Fig. 4, it was found to be serviceable. The permanent job was, of course, of proper materials and is still running.

This repair having been the most interesting one I experienced, I have related it alone here. Judging from the other quick jobs, which I have found occasion to execute, at some time or other, it seems to me that a repair may in a good many cases surpass the original piece in strength and serviceableness, at least for some time. It probably is not too rare an occurrence that the mechanical ability of the car user exceeds that of a designer, especially where some apparently insignificant details are cerned.

Chicago, Ill. H. R. WILLARD.

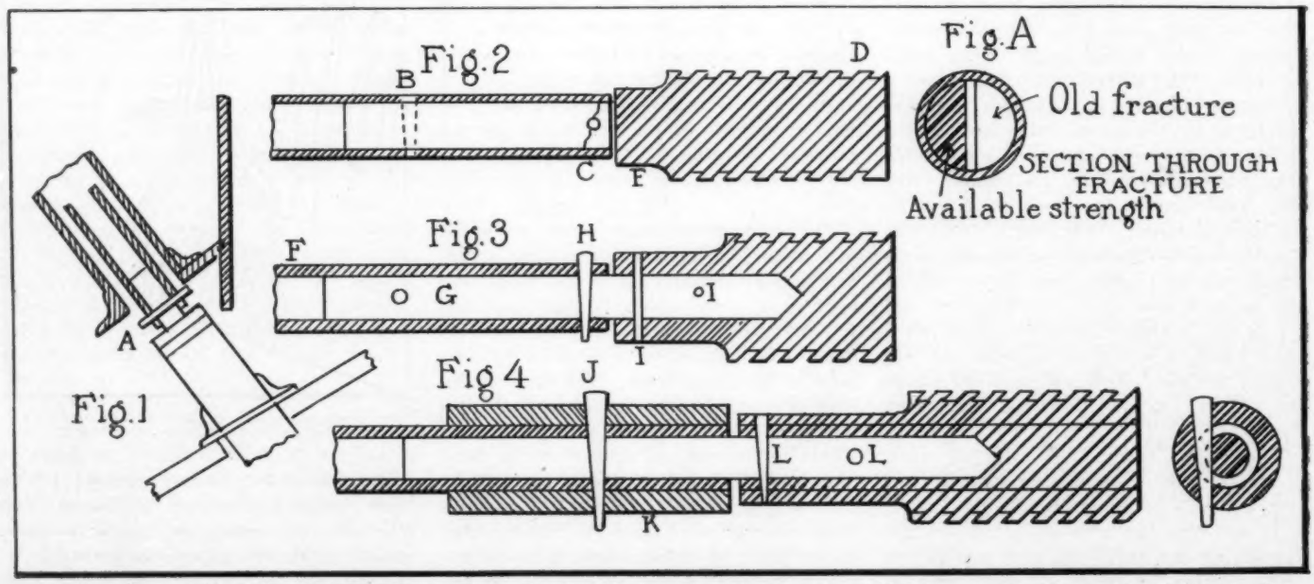

Fig. 1—Lower end of shaft of steering wheel. Fig. 2—Showing where screw broke through pinhole. Fig. 3—Showing how the broken member was drilled and round iron inserted. Fig. 4—Showing appearance of the permanent repair with a steel reinforcing sleeve

My Ideal 1912 Automobile

Readers' Conceptions of What Next Year's Car Should Be

Specifies Underslung Frame

EDITOR THE AUTOMOBILE:

One important factor of an ideal motor car, in my estimation, should be its safety. To secure this I would specify an underslung frame, which has been time-tried, and has proven itself to be the safest construction.

The front axle should be a one-piece, drop-forged I-beam, and instead of having forked ends it should fit into forks integral with the spindles, thus weakening the axle in no way. The spring seats should be made integrally with the axle.

The cross-steering rod should be in the rear of the axle and be a drop-forged I-beam. The cross-steering rod, axle, spindle, arms and knuckles should be of chrome nickel steel and all wearing parts supplied with grease cups and simple adjustments. The steering gear should be of the worm and sector type, the housing being bolted to the frame. The steering column should be bolted to the motor sub-frame by means of a rod. The steering wheel, 20 inches in diameter, with a corrugated hard rubber rim, and with the spark and throttle levers fixed above it.

The motor should be a three-point suspension unit-power plant, six cylinders, cast in pairs of two, 4¾-inch bore, 6-inch stroke, 2-inch valves in head, with easily removable cages, four-bearing crankshaft, cams cut integrally with a four-bearing camshaft placed on right side of motor; valve tappets with rollers and fittings in the guides with a square fit, and the entire valve system, *i. e.*, rocker arms, push rods and tappets, should have simple adjustments for wear. The pistons should be dome-shaped, having four rings and the wrist pins held in place by both.

The ignition system should be of the double type, magneto, storage battery and two sets of spark plugs placed on the left side of the cylinders. Also the magneto and the battery distributor should be on the left side, thus making the wiring connections very short. The magneto should be an Eisemann, with a non-vibrator coil, and the battery should have a vibrator coil, both easily removable for inspection.

The cooling system should consist of a Livingston radiator in connection with a centrifugal pump driven by the magneto and battery distributor gear and an eight-bladed aluminum fan driven by a worm gear.

The lubrication system should be a gear-driven pump contained in the lower half of the aluminum crankcase (which is also the oil reservoir) forcing oil to all crank and camshaft bearings and the gears; and a constant level splash system for the crank and wrist pin bearings and the cylinder walls.

The gasoline system should be of a force feed type, with a pressure release, driving gasoline from a 30-gallon tank on rear of car, through a No-chammy strainer to a water-jacketed Rayfield carbureter (which has proven to me by experience that it can produce a perfect mixture at all speeds and under all conditions, and still economize on gasoline) placed on left side of motor.

The magneto and camshaft gears should have oblique teeth and be placed in front part of crank case.

The flywheel should be at the rear end of the crankshaft and enclosed in the unit housing. The clutch should be multiple disc, running in oil, with 26 steel driving plates and 25 bronze driven plates.

The gearset should be selective sliding and have three speeds forward and one reverse.

The steering mechanism should be on the left. The clutch and service brake, operated by left-foot pedal, and the emergency brake operated by right-foot pedal. In this way the change-speed lever is permitted to be in the center and it should not be operated in an H-slot but in a short cylindrical column, with a ball and socket joint, since the lower end of the lever would fit directly into slots in the gear-changing shafts. This control, along with a foot accelerator, should make one of the simplest controls.

There should be but one universal joint just back of the transmission, for the underslung frame would supply a straight line drive.

The rear axle should be floating and have a supporting member of one-piece drop forging, extending clear to outer ends of hubs. The center of this forging should be a large ring, in which the differential and bevel-drive would be supported on large ball bearings. On the forward face of the ring should be bolted a housing completely enclosing the tail shaft. A semispherical plate at the rear would encase the differential and by having a plug in it would supply a very accessible means of putting grease in the housing. By the removal of the above plate the entire differential and bearings could be removed. The axle shafts should have eight-jawed flanges which fit into notches on the wheels. The supporting member should also provide bearing surfaces for swivel spring seats. The radius rods should be I-beam drop-forgings.

The front springs should be semi-elliptical, 36 inches long, 2 inches wide and 8 in number. The rear should be semi-elliptical, 56 inches long, 2½ inches wide, 10 in number and of the Packard type of connection of the rear end to the frame. All springs should be assisted by shock-absorbers and all spring bearings fitted with grease cups.

The brakes should be four in number, enclosed, internal expanding, 18 inches in diameter, 2 inches wide, giving about 452 inches braking surface, and all brake mechanism between frame members.

The wheels should be large enough to be fitted with 42 x 4½ I. D. tires, should have demountable rims and spokes of second-growth hickory. The front wheels should have 12 spokes, and the rear 14, each of which is bolted to the brake drums about 2 inches from edge of hub flanges.

The body should be a four-passenger torpedo, sheet-metal, with wood frame, fitted with 10-inch upholstery, trunk rack, running-board battery boxes and tool kit, and tire rack for two tires and rims.

The equipment should be: Combination Klaxon horn, compressed air starter, engine tire pump, complete set of tools, Warner speedometer and clock, Gray & Davis lighting system with side lights flush with the cowl dash, and mohair top and seat covers.

Wheel base should be about 124 inches.

This car should cost about $4,000, as I agree with Mr. Louis Bourgeotte, in your issue of October 15, and believe that such a car as I have described cannot be built, with the best materials in all parts, such as silico-manganese steel springs, for less money.

FRANK R. SCHUBERT.

Barberton, Ohio.

Wants Nice Little Car

Editor THE AUTOMOBILE.

Availing myself of your offer of outlining my ideal of a car, would say that I would prefer a small car for two passengers, roadster type, with fore-doors, about 106 inches wheelbase, with a motor permitting the car to go easy on say 20 miles an hour. I believe in a chain drive, live axle, 34 by 4 tires, and above all, high-grade workmanship and material. Such a car, if sold for $500, could be manufactured by the myriad.

FRANK WHITNEY.

Buffalo, N. Y.

Review of 1912 British Models

LONDON, Oct. 20—The first point that presents itself for consideration in regard to next year's cars is the matter of engine design, and the first subdivision of this section relates to the valve system. It is truly an extraordinary thing to find that after all the ingenuity and skill expended on the invention and design of new valve methods, the field is still left free for the poppets on one side and the Knight sliding sleeves on the other. As far as the sleeve-valve engine is concerned, its popularity is steadily increasing. The Daimler Company has not produced a poppet engine for 3 years, and the management declares that it desires nothing better than its present Knight engine. Incidentally, the Daimler output this year is the largest of any European firm. In addition, the following licensees of the Knight engine do a big business in Great Britain: the Rover Company, the Belgian Minerva, the German Mercedes, and the French Panhard. It would probably be correct to say that one car in every five sold has the sleeve-valve engine. This proportion is likely to be bettered next year, for two new licensees will be found in the Deasy Company, which has Mr. Siddeley, a leading British designer, at its head, and the B. S. A. firm (the gun and small arms factory), which will produce a small car of 14 horsepower, selling at about the $1,750 mark.

But, while the Knight engine is popular with a big section of the community, it must be agreed that the present-day, poppet-valve engine, as made by the best firms, has had so much attention paid to the silencing of its details that it is, for all practical purposes, quite as silent in operation as the sleeve-valve type. Spring-actuated tappets, greatly reduced clearances, stout cover-plates across the valve mechanism, and other devices, have repaid their cost by the almost complete muffling of noise. The valves silenced, other engine noises have been disproportionately obtrusive, and the silencing process has had to be carried out right through the chassis, and even in the body-work. Hence, in the engine, the use of Morse-type chains is rapidly gaining for camshafts and magneto drive, and thus, often enough, the only gears in the engine are those inside the magneto. To quiet this accessory the Bosch firm will in future case in the whole of the gearing and contact breaker mechanisms.

To show what an effect the silent engine has exerted on general design, it may be stated that worm-driven rear axles have become quite general, particularly in cars under 30 horsepower; that chain-driven gear boxes have been tried by several firms (only one firm, Maudslay, has definitely adopted the system for 1912), and that all minor transmission details, such as the universal joints, have been redesigned, with lessened clearance. In the body work all loose joints or creaky places have been eliminated; in addition, rubber buffers are frequently inserted between the body and the frame members.

But, to return to engine design, it is clear now that the unit system of grouping together engine, clutch and gear box has disadvantages in the way of inaccessibility and greater expense of repair, which more than outweighs any mechanical benefits which result from this form of construction. Consequently, fewer makers announce this feature for 1912 than last year. As far as the combination of gearbox and rear axle is concerned, this being, apparently, a system much favored by the American designer, there is not any British car so constructed except the big Sheffield-Simplex car; this is styled the gearless car, in that it is claimed to be always started and driven everywhere on the direct drive. However, to comply with the law, a reverse gear had to be arranged, and at the same time an emergency low gear was provided. These speeds are housed in a forward extension of the rear axle casing.

Malleable iron is largely replacing aluminum for crankcase and gearbox construction, especially for small cars. Here the monobloc, four-cylinder casting is combined with the top half of the crankcase, the lower half being an oil pan made of aluminum or even of sheet steel. However, aluminum is very cheap at present, and therefore its use is not likely to be further diminished. Pressed steel construction has not made the anticipated progress.

Multiple-unit cylinders are increasingly common for fours, about half of the engines under 20 horsepower being of this type. Above this figure pair castings are usual, but for six-cylinder motors the two sets of three is the practice of the best makers. Single-unit cylinders are used by practically no one except Austin; it is curious how this designer, who was responsible for the Wolseley cars for 10 years until he established the Austin Motor Company, resolutely stands by the separate cylinder design.

The argument in favor of a bearing between adjacent throws of the crankshaft is well recognized, and one might safely say that about two-thirds of the best-known engines are thus designed. When a monobloc cylinder casting is used, five bearings are not possible, but three are considered the minimum. Crankshafts with but a bearing at each end are not favored even in the smallest powers. It is somewhat curious that in high-grade, six-cylinder practice there should be a marked difference of opinion. Some makers fit seven bearings; others of equal repute consider four to be ample; but, in any case, the crankshaft bearings and webs of a six are always made much stouter than those of a corresponding four, the actuating motive being not so much that of strength considerations, but the desire to reduce the periodic vibration trouble to the minimum. This complaint has been greatly in evidence since the engines have been quieted down so much, and on some cars the "thrash," or maximum vibration period, has been sufficiently objectionable to call for a radical cure. An effective remedy is provided by the slipping-clutch-flywheel device, fitted on the Rolls-Royce cars and also on the Daimler sixes. This consists of a disc clutch placed on the front end of the crankshaft and having as the driven member a heavy rim, which usually acts as the fan belt pulley. When the critical speed of rotation is reached it is found that the clutch slips somewhat, and this action has the effect of damping down the main vibrations which, if unchecked, would culminate in a very marked tremor. There cannot be any doubt as to the efficiency of this device; a run on a car with the clutch fitted and then with it removed at once demonstrates its successful action.

The subject of engine dimensions calls for some notice. British cars have, in general, smaller engines than American vehicles of similar price and intended for similar work. For instance, the average British four-seater has a 20-horsepower engine—not that there have been many 20's, but that this power is the mean between the two popular types of 15 and 25 horsepower respectively. As all engines are named by their tax rating (which is the S.A.E. formula of $D^2 N \times 0.4$), it will be recognized that 3⅛ inches and 4 inches are the popular sizes for four-cylinder bores. Strokes vary from 1.4 to 1.8 times the bore. The average ratio for 1911 was about 1.5, but for 1912 this is likely to run out at about 1.7. This coming year, too, there are many small fours, with engines of the average dimensions of 70 mm. x 120 mm. rated at 12 horsepower. The bigger fours have each its corresponding six-cylinder model. Surprisingly popular are the sixes, particularly for the covered cars, and this demand shows no signs of abating. The leading makers seem to have no difficulty in obtaining an extra $600 or so for a six-cylinder model, com-

pared with a four-cylinder of approximately the same power.

Consideration of the transmission system indicates clearly that the leather cone clutch is further increasing its preponderance. The disc form is retained by a few makers, but other types, such as the internal expanding shoes or the contracting band, are being replaced by the leather cone. In not a few cases the cone clutch is enclosed, and the rubbing surfaces run in an oil bath. Increased attention has been paid to the flexible coupling bteween clutch and gearbox; this once potent cause of rattle and vibration has now been toned down to the silent level of the other components. A step in the right direction has been made by replacing the "sliding squares" joint by a double Hooke's coupling.

This year shows a general move in favor of the four-speed gearbox; hitherto, three forward speeds have been considered ample for all types, and therefore it is rather a reversal of previous tendency to provide the extra gear on small, medium, and large cars. The influencing factors have been the increased demands which are made upon the small four—that is, the owner of a 15-horsepower four-seater wants to average the same pace be increased—and, secondly, the desire to reduce the engine noise on the indirect gears. With two steps between first and top gear. the maximum engine speed is much less than where only a single intermediate gear is provided, and likewise the rotational speed of the gears themselves is reduced. Invariably, the top gear has the direct drive; the indirect fourth is no longer standard.

A fact in regard to gearsets is that roller bearings have not come into the general use anticipated. Ball bearings are almots universal, and not more than three firms pin their faith to the rollers. In connection with bearings it should be noted that, for engine construction, plain bearings hold almost undisputed play. Ball and roller bearings have proved too noisy, and the advantages gained in other directions were too slight to make them popular. With the effective systems of lubrication now universally employed, plain bearings (white-metal lined in all cases) give perfect satisfaction.

Lubrication systems under two chief types, with many less important variations. Many of the best known engines have pressure feed throughout; others of no less standing show a preference for the troughs-beneath-the-connecting-rods arrangement, where in the supply from the large base sump is pumped into reservoirs beneath each cylinder and thence splashed to all the bearings. In this latter system it is the custom to raise the level of the trough and of the oil therein in accordance with the motion of the throttle lever, so that the supply of lubricant is increased in the same proportion as the load on the engine. It is a curious fact that no decided preference is shown for either the plunger or the rotary-gear type of pump.

A growing practice inclines the engine at an angle of about 8 degrees to 10 degrees, so that the crankshaft may be directly in line with the propeller shaft of the worm-driven axle and the working of the universal joints thus reduced. Of course, if the worm is placed above the worm wheel, the engine remains parallel with the frame, but by far the majority of makers favor the worm-below position. The chief merit of this arrangement lies in the fact that the worm has a copious supply of oil when the car is being started. When running, the lubricant is carried round by the worm wheel, and then there is little difference, as far as frictional loss is concerned, between the two types. It is at the moment of starting, however, that the greatest pressure occurs on the teeth, and, if at this time the surfaces are dry, wearing of the phosphor-bronze worm is inevitable. Worm drive is not universal, but more than half of the leading makes are so fitted. By dint of great care in the planing of the gears, of even more care in the hardening process, and by a final grinding of the teeth on special machines, the makers of bevels are now able to produce gears which are no longer open to the objection of noise. As far as transmission efficiency is concerned, the bevel has a slight advantage over the worm gearing.

A feature which is apparently exclusive to the British trade is the general popularity of the detachable wheel. Quite 75 per cent. of 1912 cars will be so equipped, half a dozen different types of wheels sharing the honors. The wire form of wheel heads the list. This was pioneered by the Rudge-Whitworth firm, but it is also made extensively for supply to the trade by Riley, Goodyear and others. Some firms, like Humber, make their own detachable wire wheels, but the general custom entails the purchase from the specialist manufacturer. Besides this, the pressed-steel spoke is popular, its superiority over the wire form lying in its improved appearance and greater cleanliness. Where wooden artillery wheels are fitted, these are frequently detachable.

Calendar of Coming Events

Shows

Jan 2-11.....New York City, Hotel Astor, Importers' Salon.
Jan. 6-13.....New York City, Madison Square Garden, Twelfth Annual Show, Pleasure Car Division, Automobile Board of Trade.
Jan. 6-20.....New York City, Madison Square Garden, Annual Show, Motor and Accessory Manufacturers.
Jan. 10-17.....New York City, Grand Central Palace, Twelfth Annual Show, National Association of Automobile Manufacturers; also Motor and Accessory Manufacturers.
Jan. 15-20.....New York City, Madison Square Garden, Twelfth Annual Show, Commercial Division, Automobile Board of Trade.
Jan. 20-26.....Milwaukee, Wis., Auditorium, Fourth Annual Show, Milwaukee Automobile Dealers' Association
Jan. 22-27.....Detroit, Mich., Wayne Gardens, Eleventh Annual Show, Detroit Automobile Dea'ers' Association.
Jan. 22-27.....Providence, R. I., Providence State Armory, Rhode Island Licensed Automobile Dealers' Association, Automobile and Accessories Show.
Jan. 27-Feb. 10....Chicago Coliseum, Eleventh Annual Automobile Show under the auspices of the National Association of Automobile Manufacturers. Pleasure cars, first week. Commercial vehicles, second week.
Feb. 5-17.....St. Louis, Mo., Coliseum, Annual Show, Pleasure cars, first week. Commercial vehicles, second week.
Feb. 12-17.....Kansas City, Mo., Annual Show, Combined Association of Motor Car Dealers.
Feb. 14-17.....Grand Rapids, Mich., Third Annual Show.
Feb. 17-24.....Newark, N. J., Fifth Annual Automobile Show, New Jersey Automobile Exhibition Company, First Regiment Armory.
Feb. 17-24.....Minneapolis, Minn., National Guard Armory and Coliseum, Annual Automobile Show, Minneapolis Automobile Show Association
Feb. 19-24.....Hartford, Conn., Annual Show, Automobile Club of Hartford, State Armory.
Feb. 20-24.....Binghamton, N. Y., State Armory, Third Annual Show, Automobile Dealers' Association.
Week Feb. 22.....Cincinnati, O., Annual Show, Cincinnati Automobile Dealers' Association.
March 2-9.....Boston, Mass., Tenth Annual Show, Boston Automobile Dealers' Association, Inc.
March 4-9.....Denver, Col., Auditorium, Annual Show.

Meetings, Etc.

Nov. 20-24.....Richmond, Va., First American Road Congress, under auspices of American Association for Highway Improvement.
Nov. 22.....Road Users' Day, under direction of Touring Club of America.
Jan. 18-20.....New York City, Annual Meeting of the Society of Automobile Engineers.

Race Meets, Hill-Climbs, Etc.

Oct. 27-Nov. 3.....Chicago, Ill., Thousand-Mile Reliability Run, Chicago Motor Club.
Nov. 2-4.....Philadelphia Reliability Run, Quaker City Motor Club.
Nov. 3.....Newark, N. J., 125-mile Automobile Endurance Run, *Newark Star*.
Nov. 3-4.....Columbia, S. C., Track Races, Automobile Club of Columbia.
Nov. 4-6.....Los Angeles-Phoenix Road Race, Maricopa Auto Club.
Nov. 9.....Phoenix, Ariz., Track Races, Maricopa Automobile Club.
Nov. 9-10.....Chicago, Team Match, Amateurs vs. Trade Members to Waukesha and Return, Chicago Automobile Club.
Nov. 9, 10, 12.....San Antonio, Tex., Track Races, San Antonio Auto Club.
Nov. 13.....Harrisburg, Pa., Economy Run, Motor Club of Harrisburg.
Nov. 27.....Savannah, Ga., Vanderbilt Cup Race, Savannah Automobile Club.
Nov. 30.....Los Angeles, Cal., Track Races, Motordrome.
Nov. 30.....Savannah, Ga., Grand Prize Race, Savannah Automobile Club.
Dec. 25-26.....Los Angeles, Cal., Track Races, Motordrome.

Foreign

Nov. 3-11.....London, Eng., Olympia Show.

THE AUTOMOBILE

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THE CLASS JOURNAL COMPANY

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The Long-Stroke Motor

TO-DAY everybody is talking the long-stroke motor, but as yet only a very few have definite ideas as to whether there are advantages in it, compared with the square motor of to-day, to warrant the immediate adoption of the long-stroke one. The condition of chaos at present is explained by the different views taken on the question by different factories and also by different engineers. One leading American engineer has been experimenting this Summer with a new long-stroke type and he has announced that he has found it to be less economical of gasoline than a square type and yet give no extra power to compensate for it. Another engineer states that he gets more power out of the long-stroke motor on hill-climbing work over a certain degree of grade, but that under a certain percentage of grade the square motor is superior. One maker, who is an enthusiastic racing man, asserts that he has obtained better speed results out of a long-stroke motor than he ever could dream of obtaining out of the square or nearly square size. So the story of the long-stroke motor goes. Not a single engineer has come anywhere near solving it. They are all, or at least a big percentage of them, trying to solve it, but are yet far from the goal. All of them are learning and education is what we need.

Glancing at the results obtained by not a few of the foreign makers it is interesting to see that the more they investigate the long-stroke problem the better results they are obtaining. One of the best-known motor builders in France—whose ideas have been more widely imitated in America than those of any other foreign builder—has reduced the bore and added to the stroke of every one of his different motor sizes for the coming season. By reducing the bore and adding to the stroke he has increased the horsepower from 6 to over 12, according to model. Not only has the power been increased but the consumption of gasoline has been reduced. This alone is a big factor with the European maker and it is bound to become a factor with many of the American makers. This is particularly the case when it is accompanied by an increase in horsepower. Everybody is looking for an increase in motor efficiency, and if with it can be had a reduced fuel consumption a great victory has been won. The foreign maker has been experimenting with the long-stroke motor for many more years than the American maker, and naturally has solved the problem to a much greater extent. He started off his experiments with racing motors, but during the season just closed what he learned in racing has been applied in modified form to his touring results and the outcome is proving most satisfactory. The racing of a year ago proved that more power can be obtained from a relatively small-powered long-stroke motor than from a very large square type, when certain valve changes are carried out. The same is taking place to-day with touring cars.

Having discovered this in more or less certain terms, at least to suit himself, the foreign builder has for next year gone stronger than ever to long-stroke design. Of the new models that are being exhibited this week at the Olympia in London there is not a solitary one in which the bore is in excess of the stroke, and there is only one in which the bore measures exactly the same as the stroke. In all the others the stroke is much in excess of the bore. A few generalities will suffice to explain this: One of the oldest European builders, and a name which stands highest of all in the automobile engine field, has brought out a new 1912 model of motor with a bore of 70 millimeters and a stroke of 120 millimeters, which is a stroke-bore ratio of 1.71 to 1; in other words the stroke is nearly 75 per cent. greater than the bore. This maker is not a radical, rather has he been looked upon as one of the most conservative of the big builders, and it is a certainty that he has not brought out this new model without having tried it out in every detail. Generally a corps of engineers work on a new model before it is announced and it is never finally accepted until one or two of the directors have given it a thorough tryout; consequently when a new type of these proportions is announced its kinks are generally removed. The act of this maker alone is a big argument for the long-stroke motor. But the story of this one could be repeated with over fifty other concerns. All through it is the longer-stroke type. The proportions of stroke to bore rarely drop below 1.5 to 1; that is, a motor with the stroke over one-half as long again as the bore. Many of the makers have the proportion as high as 1.66 to 1 and a few have reached 1.81 to 1. One or two of the smaller builders have brought out 2 to 1 ratios.

Many arguments are to-day being urged against the long stroke, one being that it makes a longer cylinder casting necessary and so raises the center of gravity of the car. This is true, but it is also true that much can be done to reduce this weight, and it is along this line that much is being done to-day. With the long-stroke motor it would be almost out of the question to try to use valves in the head, and it would be impossible to have an overhead camshaft. As a result the long-stroke motor has started the study of the valve problem. The new location of the valves is but one of the divisions of this question. The shape of the cam has to be altered, the diameter of the valve is a point to be settled, and the manifold problem also presents itself. But if the long-stroke motor presents some troubles in connection with

valves it simplifies others. Owing to the longer cylinder castings it permits of a better grouping of the carbureter, the magneto, the water pump and, if necessary, a generator for the electric lighting system. The manifolds can be carried higher up and out of the way of these parts. The same applies to some of the water pipes.

Some have argued against the long-stroke motor on the ground of extra weight, reasoning that because the cylinder castings are longer and the stroke longer, the crankcase must be made deeper and the crankshaft throws longer, so that weight is added along the line. The net result is that makers have been cutting out unnecessary weight in their long-stroke types. The reciprocating parts have been lightened throughout. The tubular connecting rod has been introduced. It gives sufficient strength and is much lighter than the forged type in use at present. The piston has also been cut down in weight. Some makers use steel pistons and the rule of perforation is becoming very general. The crankshaft weight has also been reduced by drilling out the shaft from end to end and cutting down the weight in parts of the shaft where it has not been necessary. In this respect the long-stroke motor is doing much good in making it imperative that makers must improve it in order to make it practical. Necessity has always been the mother of invention, and in case of the long-stroke motor the truth of the adage is being proved once more.

Lubrication was at one time urged as an impossibility in the long-stroke type of motor. In the early days it was considered impossible to oil except with castor oil, and the offensive odor and high price were considered insurmountable obstacles. Well, the long-stroke has come and it is being lubricated, and while castor oil is being used by many, others are demonstrating that it is not necessary and that many of our leading oil makers can produce a grade of oil that will meet all of the requirements. This is simply one more example of necessity compelling invention on the part of the oil people. They stand ready to fill the bill, and when new motor types demanding a special lubricant are brought out they come to the front and supply the lubricant. That maker would be a small quantity who would not build a certain type of motor, solely because he was afraid it could not be lubricated. There are often eccentric constructions, which are wrong from an engineering point of view and also from a manufacturer's viewpoint and which perhaps cannot be oiled, but the long-stroke motor does not come under this classification.

The American maker is wrestling with the long-stroke motor and is going to continue doing so. He will have to. Building a long-stroke motor is not simply adding an inch or so to the height of the cylinder casting, lengthening the connecting rods, making the crankshaft throws longer and deepening the crankcase. Building a long-stroke motor is an engineering problem from the ground up, and the man who will make a success must start out in a broad-minded way to settle the question. He must balance one part to suit the other and cannot pick some pieces out of a four-cylinder motor and put them into a long-stroke one. The conditions under which the two kinds operate are different, the problems in them are different, and each must be approached from its own viewpoint. In a word, the two are entirely different in the many problems that enter into them.

Schimpf Succeeds Butler

WILLIAM SCHIMPF, president of the Long Island Club and a member of the A. A. A. Contest Board for the past year, has been appointed by President Robert P. Hooper to fill the vacancy caused by the death of the late Samuel M. Butler. The appointment followed a conference involving President Hooper, of the A. A. A., and President H. E. Coffin, of the Manufacturers' Contest Association, which co-operates with the owners' organization in the conduct of automobile competitions. Mr. Schimpf is the head of one of the largest automobile clubs in this country, and is naturally greatly interested in competitions, his service on the board having given him a complete understanding of the needs of the position to which he has been appointed.

Last Rites for Samuel M. Butler

Samuel M. Butler's funeral was held at his late home in Brooklyn on Sunday in the presence of a considerable number of his close personal and business associates. Floral tributes were numerous and beautiful. The exercises were simple. Interment was at Greenwood.

Despite the fact that the funeral was private there were many men prominent in automobiling circles present, including all his associates in the A. A. A. and many high lights of the trade newspaper world.

There was a splendid array of floral exhibits which had come from personal friends, including handsome designs from the Automobile Club of America, the Manufacturers' Contest Association, the Chicago Motor Club and his associates at the National headquarters in New York City.

Soft Pedal on Show News

LEST the publication of show arrangements check retail business at this season, the Automobile Board of Trade and the National Association of Automobile Manufacturers have put down the soft pedal on announcements for the time being.

Business is reported fairly good along the row but the tendency to slow up in anticipation of the shows is felt in some quarters.

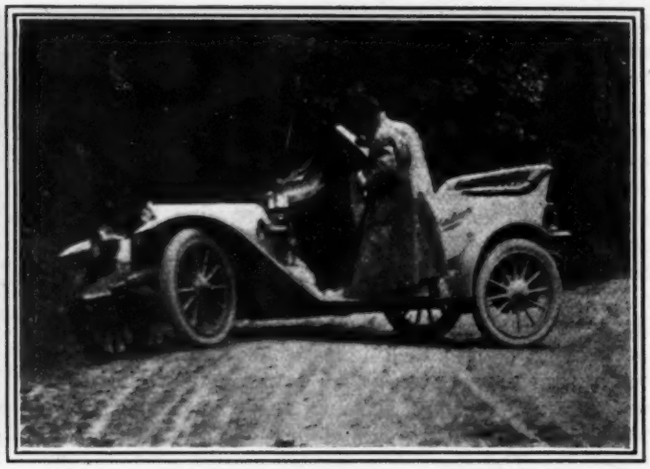
As a matter of fact, the developments in the show situation during the week have not been important and simply represent normal progress in preparation for the two big exhibitions to be held in New York.

Composition Proposed for Streator

Composition of the unsecured debts of the Streator Motor Car Company, together with those of Paul R. Chubbuck and John C. Barlow has been suggested by a committee of the creditors of the embarrassed company. The plan brought forward is to release the company from liability for its former debts and the acceptance on the part of the creditors of bonds issued by the People's Trust and Savings Bank as trustee for the debtors. A trust deed conveying to the bank the assets of the Barlow and Chubbuck is a condition precedent.

The bonds will be signed by Barlow and Chubbuck and will be issued to the creditors through the bank if the proposal is accepted. Except for some trivial claims, the bonds are conditioned to mature as follows: 10 per cent. in 1 year from Sept. 23, 15 per cent. in 2 years, 20 per cent. in 3 years, 25 per cent. in 4 years, and 30 per cent. in 5 years, together with interest on the unpaid balances at 6 per cent.

Case, No. 3, Hansen, driver, finished four days with a clean score



Daubner in the Halladay, No. 5, stopping to repair tires

Many Clean Scores in Chicago Run

LOUISVILLE, KY., Oct. 29—The fifth annual reliability run of the Chicago Motor Club, which started from Chicago Friday morning with seventeen contestants and five official cars, has completed two legs of the 8-day tour that has been mapped out by the Chicago organization. Illinois, Indiana and part of Kentucky have been traversed and as yet nothing has been accomplished toward deciding the winners. Only one of the seventeen cars has been penalized and that only for trivial troubles brought about largely by the inexperience of the driver —an amateur who put in his big National roadster for the fun of it. Certainly sixteen cars clean after 404 miles of going is a most remarkable showing, a showing such as never before has been made in a Chicago reliability.

The tour got an auspicious start from Chicago Friday morning, with only one car scratched, that a Lion that was pulled out because the change of date did not suit the entrants. This left nine running in the touring car section and eight in the roadster division, striving for four prizes—the touring car cup, the Van Sicklen roadster trophy, the Chicago Motor Club team trophy and the fuel economy prize offered, as usual, by the Standard Oil Company.

The first day's run was from Chicago to Indianapolis over a route that differed from the conventional in that it followed a new trail that led past Hazelden farm, the home of George Ade, the novelist, who had invited the motorists to make his place the noon control. It was 94 miles to this place and it was easily negotiated even though the contestants had to make a 5-mile detour just out of Crown Point because a new stone road that was included in the original route had not been opened to traffic. The stop at Ade's long will be remembered by the contestants. The novelist gave the motorists the run of the farm and the noonday meal was served by the Daughters of Ruth, who are raising a fund to build a church. The novelist also had a "life saving" station on the second floor which was greatly appreciated by the motorists after the cold drive. He also provided them with souvenir postal cards, already stamped. Of course each man wrote one and Ade agreed to mail them. This gave him an opportunity to crack a merry joke. In writing for the Indianapolis *Star* of the visit of the Chicagoans, Ade dryly added: "I have read all the souvenir postal cards left here to be mailed, and I find that the visitors were wildly enthusiastic about the dinner."

Velie, No. 104, Stickney at the wheel, unpenalized at half-way point

It was no trick at all to drive from Ade's to Indianapolis, although the distance was 130 miles, and everyone got in on time and with plenty to spare. The work of the technical committee was easy, for there only was one card to consider, that of Paul Strauss, driver of the National, who had drawn 3 points for carbureter adjustments at the start, undoubtedly caused by the chill weather. All others were clean and no one had any complaints to make.

In the evening the Chicagoans were the guests of the newly formed Hoosier Motor Club and the evening was devoted to speeches by men prominent in the motor world.

Indianapolis to Louisville

The run from Indianapolis to Louisville yesterday only was 178.5 miles, but it proved an eye-opener to the Chicagoans, who had not realized that right at their doors is a touring territory that cannot be beaten anywhere in the country. Certainly the Berkshires can offer nothing better in the way of scenery and the roads through southern Indiana and that portion of Kentucky running into Louisville cannot be improved upon much. The Chicagoans struck the beautiful scenery about 20 miles from the noon control, Bedford. Just outside of Medora, 83 miles from Indianapolis, was encountered a most remarkable hill which would have been a serious proposition had it rained. It is about 1-2 mile in length and the average grade is about 16 per cent. It is a veritable corkscrew, with little short turns that wind not

abruptly but continuously to the top. There must be not fewer than ten turns on the way up—in fact, it is like climbing a chimney. The road bed itself is excellent and the road winds through a thick wood that but adds to the beauty of the climb.

Leaving Bedford at noon, the tourists found they had but just tapped the southern beauty vein. The magnificent roads continued and the tour had hardly left Bedford before there was encountered a most remarkable freak of nature—a hogsback road that ran for about a mile on the top of a sharp ridge between two beautiful valleys. One could look either way and drink in the scenery. On one side was a winding river and on the other heavy woods. The road itself took up the full width of the ridge and no driver dared take his eye off the highway to peek at the scenery lest he plunge into a chasm.

Hardly had they passed this beautiful stretch than the winding road brought them face to face with a hill that made Algonquin pale into insignificance, a 20 per cent. grade that rose abruptly from the valley road. Luckily it was straight and the road good, else there might have been trouble, No one, however, experienced any trouble getting up.

This fine road continued to within about 30 miles of Louisville. At one place it followed an interurban trolley, being first on one side and then on the other. Someone counted and declared afterwards that this trolley line was crossed no fewer than thirty times before the trail straightened out and swung into Louisville.

Reaching here yesterday afternoon, the tourists looked back over the day and marveled at the wonders. They declared themselves surprised at the fine roads of southern Indiana. It was surprising, too, because there were so few motor cars encountered on the road, while the inhabitants themselves did not seem to be overburdened with wealth. Yet there were found well-built roads, wide and rutless, with stone bridges at some places, and, best of all, these roads have every appearance of being maintained. The towns themselves seemed prosperous, but the day's journey failed to show any great motoring strength in this section. The people themselves seemed friendly to motoring and in each town the inhabitants gave the tourists the glad hand.

This trip of the Chicagoans seems destined to open the eyes of the western motoring world to the beauties that lie at their doors. It is hard to realize that within a day's journey of Chicago there is a territory that is so rich in good roads and fine scenery as this and it is predicted that in another year the itinerary that is being followed by the Chicago Motor Club will be the scenic tour of the middle west.

The run from Indianapolis here failed to disturb any of the perfect score section. Strauss in the National drew 27 more points—14 for changing spark plugs and 13 for being late. The Case bent part of its steering connection trying to follow the trail over a stretch of railroad ties, but this was whitewashed by the technical committee because the checker had failed to carry

Midland, one of the official cars, did excellent work on Medora hill

out the instructions of the referee. When the stretch over the tracks was reached the referee saw the confetti spread along it, but he realized this was asking too much of the cars and he found a detour through a back yard and ordered the confetti strewn that way. The old paper was not picked up and the leading cars took the railroad route, the Case meeting with its mishap in consequence. The referee held that the accident had been brought about by the failure of one of the officials to carry out orders and no penalty was imposed.

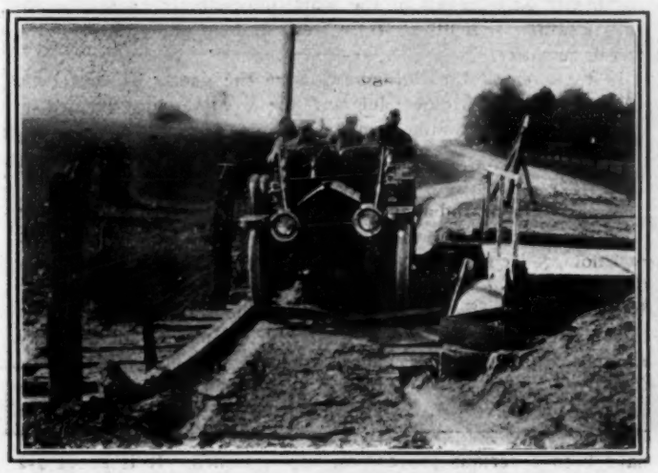
Resting up to-day, the Chicagoans this afternoon were the guests of the Louisville Automobile Club, which kept open house and devoted the entire afternoon to its guests.

From here the tour goes to Cincinnati to-morrow, Columbus Tuesday, Detroit Wednesday, Grand Rapids Thursday and home Friday.

Louisville to Cincinnati

CINCINNATI, O., Oct. 30—The contestants in the Chicago run finished a double century from Louisville this afternoon, and after the count was made to-night it was discovered that the remarkable record of the contest had been retained to a certain extent. Two drew black marks to-day, making three in all that have been demerited since the start of the run from Chicago last Friday. That fourteen cars could go 592 miles with perfect scores is a record seldom equaled in reliability contests. The two to lose their perfect scores to-day were No. 107 Grout in the roadster division and No. 9 Staver-Chicago, in the touring car class.

The Grout met with its mishap this morning. Coming down a hill 40 miles out of Louisville it skidded and before Halbert could



The National press car negotiating a tender bridge the first day

Some of the roads traversed the first day were miniature lakes

secure control of it it had run off a bridge, ripped off a rear tire and broken a spring. The occupants had a close call. Halbert patched up the broken spring, incurring 40 points thereby, to which was added 8 points for being late. The Grout will get more to-morrow morning, for it is the intention to replace the broken spring. Monckmeier's Staver was given 9 points, 7 of which were for adjusting a ball retainer and the other two for being late.

But one of the other perfect scores is threatened, No. 101, Moline, which is being driven by J. Boone; going through Shelbyville, at 12 miles an hour, a negro driving a rig turned in front of Boone, who found it impossible to avoid a bump, the result being a bent fender.

The trip to-day again led through the picturesque portion of Kentucky and over good roads, too. It was sprinkling when the tour pulled out of Louisville for a 100-mile run, but the rain was a gentle one and did not harm anyone. The roads being of stone construction, it was easy to keep going and no one worried over the weather. At Frankfort, the capital of Kentucky, the tourists were duly impressed with the high bluffs and the winding roads, but they were lost in admiration at Shakertown, when they swung down a big mountain into the Kentucky River valley, the deep gorges and the rocky formations being of a grandeur to which the Chicagoans were not accustomed. Lexington, the noon control, was reached after a trip of 116 miles and in the afternoon the tour was resumed over roads that were as winding as a corkscrew. One can get an idea of the twists by learning that the railroad was crossed thirty-seven times during the afternoon between Lexington and Covington, Ky.

The Chicagoans also got their first toll-gate experience this afternoon, being forced to pay tribute five different times. They found, too, that the roads at this end of the day's run are not so good as in the morning.

This evening the visitors were given a royal reception by the Cincinnati Automobile Club, which put on a big stag and smoker.

From Cincinnati to Columbus

COLUMBUS, O., Oct. 31—To-day's run of the Chicago Motor Club's Reliability, the fourth of the tour, was prolific of incidents that happily resulted in no one being hurt, but which decimated the perfect score field by three and left eleven surviving for the honors of this classic. The Halladay and the Oldsmobile Autocrat in the touring car division, and No. 104, Velie, in the roadster class, were demerited, while Halbert, in the Grout, had to replace the spring he broke yesterday.

The Halladay incurred 19 points, 3 of which were for cleaning the gasoline line and 16 for work on a fender iron that broke. The Oldsmobile started out with a broken gasoline line, small in itself but which grew like a rolling snowball until to-night there are charged against the Autocrat 455 points, while still more await it when the technical examination is made Saturday. To start out with, the break in the line compelled Winters to take on gasoline three times, for which he was fined 9 points. Then at the noon control at Washington Court House, he was obliged to lay up and take off the body to mend the leak. That cost 208 points. This done, the Oldsmobile started for Cincinnati, but a mile out of town in trying to pass a horse-drawn vehicle it skidded, hit the team and just escaped plunging down a 20-foot bank. It required nearly three hours to get out of this fix, the farmers being called on to help with horses. This made the Oldsmobile late to-night and the time penalty was 238 points.

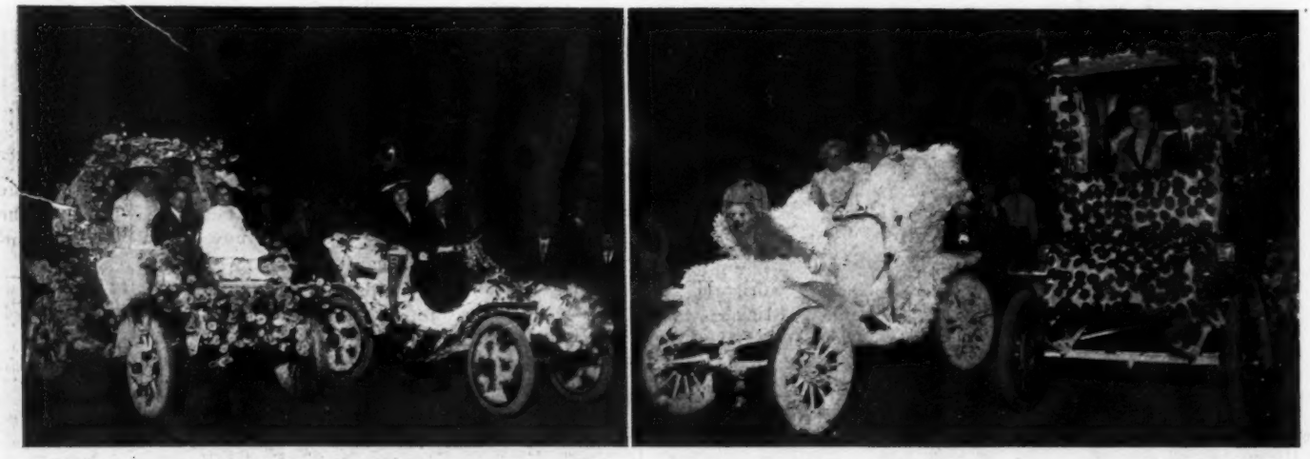
The penalization of the Velie was slight, only 1 point. Davies fixing the muffler cut-out rod, which had become disconnected. The Grout got 340 points to-day, 246 being used up in putting in the new spring, two for a clutch adjustment and 92 for being late at the noon control. The car was on time to-night.

Another victim to-day was the Abbott-Detroit 44, driven by Robbins, which broke a leaf in the front spring while yet in the limits of Cincinnati. Robbins did not have to touch it, however, and it looks as if he would be able to go through the tour with it, which would not cost him his perfect road score. The penalization of the Velie and the Halladay leaves the Moline the only make clean for the team trophy, for which it has a double chance, for this cup is decided by the two best aggregate scores. The Staver, the fourth contender, was penalized yesterday, when Monckmeier caught it.

The run to-day was 178 miles from Cincinnati to Columbus, with the noon control at Washington Court House, 98 miles. The morning route ran through Dayton and the afternoon touched Chillicothe. When the tourists left this morning the skies were cloudy and the roads muddy following last night's rains, which made the going necessarily slow.

The run to-morrow will be a hard one, Detroit being the destination. The roads between Toledo and Detroit are reported bad, and it may be necessary to make a detour to get past some of the impossible stretches. The table of penalties up to date follows:

No.	Car	Driver	1st day	2nd day	3rd day	4th day	Total
1	Moline	N. Van Dervoort	0	0	0	0	0
2	Moline	Salisbury	0	0	0	0	0
3	Case	Hansen	0	0	0	0	0
5	Halladay	Daubner	0	0	0	19	19
6	Halladay	Davies	0	0	0	0	0
7	Oldsmobile	Winters	0	0	0	455	455
8	Abbott-Detroit	Robbins	0	0	0	0	0
9	Staver-Chicago	Monckmeier	0	0	9	0	9
10	Staver-Chicago	Knudsen	0	0	0	0	0
		Roadsters					
100	Moline	Wicke	0	0	0	0	0
101	Moline	Boone	0	0	0	0	0
102	Oakland	Bauer	0	0	0	0	0
103	Velie	Gibbons	0	0	0	0	0
104	Velie	Stickney	0	0	0	1	1
105	Bergdoll	Monsen	0	0	0	0	0
106	National	Strauss	3	27	0	0	30
107	Grout	Halbert	0	0	48	340	388



A quartet of entrants in the recent electric vehicle parade in Denver, driven by Mr. N. O. Hunsicker, Mrs. L. W. N. Waters, Mrs. H, B. Simmons and Miss Blanche Edison

Group of members of the Society of Automobile Engineers en route to England on the Mauretania

S.A.E. Delegates Sail for England

THEY'RE off for Olympia! At 9 o'clock Wednesday morning a party consisting of fifty-five persons, representing the Society of Automobile Engineers, sailed for England on the steamship Mauretania on the first official visit of that organization to foreign shores.

The S. A. E. was invited to hold a joint convention with the Incorporated Institution of Automobile Engineers of England and the present trip is the outcome.

The following list is a roster of the party: B. B. Bachman, Ardmore, Pa.; Mr. and Mrs. Walter C. Baker, Cleveland, Ohio; Mr. and Mrs. J. S. Bretz, New York; Mr. and Mrs. Albert Champion, Flint, Mich.; Mr. and Mrs. H. D. Church, Detroit, Mich.; Mrs. D. H. Church, Cambridge, Mass.; Coker F. Clarkson, New York; Mr. and Mrs. Howard E. Coffin, Detroit, Mich.; John A. Crowley, New York; Arthur B. Cumner, Philadelphia, Pa.; E. A. DeWaters, Flint, Mich.; H. F. Donaldson, New York; F. S. Duesenberg, Des Moines, Iowa; B. G. Ellis, Boston, Mass.; John W. Foster, Amesbury, Mass.; C. H. Foster, Cleveland, Ohio; H. Jay Hayes, Detroit, Mich.; Robert T. Hendrickson, Fremont, Ohio; J. B. Hull, Cleveland, Ohio; William Kelly, Detroit, Mich.; George W. Kerr, Chicopee Falls, Mass.; Hugh Kerr-Thomas, Buffalo, N. Y.; Charles B. King, Detroit, Mich.; Mr. and Mrs. W. P. King, Cleveland, Ohio; Mr. and Mrs. Robert McA. Lloyd, Long Island City, N. Y.; D. G. McDiarmid, Chicago, Ill.; Mr. and Mrs. Alden L. McMurtry, New York; Carl J. Metzger, Ottawa, Ill.; William E. Metzger, Detroit, Mich.; Mr. and Mrs. Charles J. Moore, Detroit, Mich.; Bert Morley, Detroit, Mich.; C. S. Mott, Flint, Mich.; Ralph H. Rosenberg, Columbus, Ohio; A. J. Slade, New York; C. O. Snyder, Chillicothe, Ohio; Paul L. Snutsel, New York; H. C. Stutz, Indianapolis, Ind.; H. T. Thomas, Lansing, Mich.; T. R. Thomas, Racine, Wis.; G. R. Wadsworth, Cleveland, Ohio; W. G. Wall, Indianapolis, Ind.; Mr. and Mrs. G. A. Wahlgreen, Denver, Col.; Mr. and Mrs. Henry C. Wilson, New York; John G. Wood, Indianapolis, Ind.; Mr. and Mrs. S. G. Wingquist, Gothenburg, Sweden.

The following members will join the party in Europe: A. Ludlow Clayden, London; C. E. Davis, Muncie, Ind.; Marcel DeJarney, London; Charles L. Lawrence, Paris; Fritz Loeffler, Walhof, Mannheim, Germany; Louis C. Marburg, New York; A. J. Moulton, New York; A. J. Myers, Paris; Rene M. Petard, Paris; Adolph Rosner, Bridgeport, Conn.; Alfred J. White, Coventry, England; David R. Wilson, Cleveland, Ohio; Arthur Ziltener, Wessen, St. Gallen, Switzerland.

Olympia Show Offers Promising Outlook

LONDON, Oct. 21—In less than a fortnight the doors of the big Olympia building in the West End will be opened to disclose the tenth International Exhibition of Automobiles and Accessories promoted by the all-powerful trade organization, the Society of Motor Manufacturers and Traders. On Nov. 3 the show will be opened without ceremony, and it will run on till Nov. 10.

Never before has there been such a crowded assembly; some 310 exhibitors share the space, and fifty more, unable to find an unoccupied corner, are housed in neighboring showrooms.

It is rather a notable fact that nearly half of the number of American car agents are outside the show; this does not indicate that they were last with their applications, but rather that they do not care to sign the bond and guarantee clauses in respect of other exhibitions and trade maintenance generally.

To prevent the crush which has always occurred at previous exhibitions, the admission price is doubled on two days and doubled again on Society Day, Nov. 7. Another advantage from the visitor's point of view is the new rule forbidding the stand attendants to smoke while on duty. A further prohibition relates to mechanically operated working models; these usually attract such crowds that neighboring stand-holders find their business interfered with. Models there will be in plenty, but small boys will provide the necessary horsepower.

As regards the general outlook, interest is likely to center on the new small four-cylinder cars (admittedly a competitor of the American light car, but hardly a worthy foeman), on the medium-powered six-cylinder vehicles, and on the covered body exhibits. As far as the accessory section is concerned, electric lighting dynamo equipments are the special feature this year.

French Clubs Resume Race Control

ON October 18 the committee on sports of the Automobile Club de France convened with Réné de Knyff in the chair to decide whether the club should organize any automobile contests in 1912. The comments of the French automobile press with regard to the probable decisions of the committee—and no doubt intended to influence these decisions—throw light on the situation and a reflex light on the export interests of American manufacturers.

In an article in *L'Auto* on the day of the meeting, Charles Faroux, the editor of *La Vie Automobile,* wrote as follows:

"It is infinitely probable that the organization of one or perhaps even two contests will be decided. Public opinion has made itself plain in this direction. The purchaser wants one or two races. Better acquaintance with the progress accomplished by our rivals has sufficed to show that races are desirable, and a glance at our export statistics for the past two years demonstrates their necessity. From the purely utilitarian viewpoint a trial for light vehicles commends itself on lines similar to those inaugurated with so much success by *L'Auto* in the Boulogne races. As a matter of spectacular sport and with a view to striking the susceptibilities of the philistine masses, a race for large vehicles seems equally necessary.

"The regulations for the light vehicle race will be determined in due time and should be considered with great care. As regards the rules for the race for heavy cars, the report that absolute liberty will be adopted seems to be confirmed. It is well known what the writer thinks of this policy after having thought a great deal on the subject lately: It represents the worst possible conclusion whether looked upon from a technical or a national viewpoint. All the races which have been run for several years in France or abroad have shown with eloquent unanimity that the builders never cared to perfect any points in the design excepting those affected by the regulations. When there was a weight limit the metallurgical end of the builder's art made progress, and that only. Gains in motor or transmission efficiency date from the appearance of regulations bearing upon the bore or the fuel economy. Recently, at Boulogne, where the writer had neglected the question of weights a trifle, the vehicles were at once found to be far too heavy. They were ten years behind in this respect, at the same time that they exhibited great progress in motors and transmissions. At aviation contests this experience is repeated.

"Many say: 'Let all race who will, and we shall soon see who is the best.' But this is a layman's argument. It represents the negation of all method. They say it represents a formula which the public can understand. True, but mechanical progress is not concerned with the public; it is accomplished apart from the public choice. In fact, has the public ever adopted a demonstrated improvement at once, whether the question was of magnetos or of ball bearings?

"Then there is another side to the matter. On a basis of absolute liberty all that is required for winning is time and money, and these requirements can be met abroad as well as in France. To win under studied rules, on the other hand, requires a highly organized experimental and engineering department, superior service in 'tuning up' and a substantial experience in racing and technical matters; and these are all things in which we excel. This is no time for fanciful decisions. Whether one likes it or not, a race bears certain relations to the industrial development."

As anticipated in the article quoted above, the decision taken by the Sport Committee of the Automobile Club de France at the meeting referred to was in favor of resuming race control and the resolutions adopted provided for one free-for-all race to be known as the Grand Prix of the A. C. F., and in addition for a race designated as Coupe du Journal *L'Auto* for cars with a cylinder volume limited to 3 litres (183.066 cubic inches), and in other respects similar to the Grand Prix de Boulogne race which was so successfully arranged by *L'Auto* during the past year.

It is provided that the two races shall both extend over two successive days and that a distance of about 1,000 kilometers shall be covered by each of the contestants each day, making the total distance about 2,000 kilometers; change of drivers will be permitted.

Neither of the two events is to take place before June 23, 1912, but otherwise the dates are still to be decided. Both are to be run at the same time, however, and it is considered probable that the Dieppe course will be selected as the battle ground. The races will both be international, and the Sport Committee has provided a prize of 20,000 francs for the winner of the Grand Prix, this prize to be awarded to the builder of the fastest car, irrespective of the nationality of the constructor or the classification of the vehicle.

L'Auto mentions as certain competitors for the Grand Prix the Lorraine-Dietrich, the Darracq, the Cottin-Desgouttes, the Rolland-Pilain, the Fiat, the Mercedes, the Benz and four American cars, the Marmon, the Lozier, the Stoddard-Dayton and the National. The information with regard to the intentions of the manufacturers of these cars is said to be authorized. As possible participants are mentioned the Clement-Bayard, Mors, Opel (German) Itala, S. P. A. and Austrian Daimler.

For the Coupe du Journal *L'Auto,* the following are referred to as most likely to take part: Delage, Lion-Peugeot, Sizaire-Naudin, Gregoire, Hispano-Suiza, Côte (two-cycle engine), Koechlin (two-cycle engine), Sunbeam, Vauxhall, Calthorpe, Arvol-Johnston, Argyll, Excelsior, Fif, Mathis, Laurin-Klement and Puch.

Fords in French Glidden

By conference between a number of French manufacturers and the directors of the journal *L'Auto* a new set of regulations has been adopted for the Tour de France, to take place March 1 to 16, 1912. The event will be a test of endurance and regularity for stock cars of the light vehicle and the voiturette classes. As light vehicle any car may be entered which is catalogued for 1912 at a price for the chassis, without tires, not exceeding 8,000 francs, and as voiturette any car whose 1912 catalogue price is not higher than 4,000 francs, including the cost of body as well as tires.

The entry lists were opened Friday, October 21, at the offices of *L'Auto,* in Paris, and will remain open until January 31, 1912, midnight. Entries must be accompanied by the entry fee which is scheduled as follows: For one light vehicle 500 francs, for two light vehicles of the same make 900 francs, for three light vehicles of the same make 1,200 francs; for one voiturette 250 francs, for two voiturettes, 450 francs and for three voiturettes 600 francs. Every participant must produce before being allowed to start, an insurance policy proving that the life of the driver and the risk to third parties are covered in the sum of 100,000 francs in case of accident, and a duplicate of this policy must be deposited in advance at the office of *L'Auto.*

Among the very first entries for this contest were three Ford cars (American), one Delage car and three Barre cars, all in the light vehicle class.

Late Trade and General News

PITTSBURGH, PA., Oct. 31—Decision of the suit entered by the Republic Rubber Company, of Youngstown, O., against Morgan and Wright, with regard to alleged infringement of patents granted to the plaintiff concern for staggard tread tires, is expected next week. The patent in question was issued to T. J. Mell, of the Republic company, in 1907, and it is alleged that the Morgan and Wright patent was not filed until January, 1910.

The suit is in the United States Circuit Court and was heard by Judge Hazel. The complaint asks for an injunction against the defendant company prohibiting it from manufacturing its knobby tread tires and for damages for infringement. Several tire companies not affected by the suit have been manufacturing non-skid tires and it is stated that after the completion of the matter in hand the Republic company contemplates more litigation.

Christy & Christy, of Pittsburgh, represented the complainants in this action and Ernest Hopkinson, Edward W. Vaill and Antonio Knauth, of New York, appeared for Morgan and Wright.

Date Set for Indianapolis Race

INDIANAPOLIS, IND., Oct. 31—At a meeting of the Speedway management to-day it was decided that the second annual 500-mile International Sweepstakes race will be held on next Memorial Day, May 30, at the Speedway. The prizes for the event will amount to $50,000, to be divided into twelve awards as follows:

First, $20,000; second, $10,000; third, $5,000; fourth, $3,000; fifth, $2,500; sixth, $2,000; seventh, $1,500; eighth, $1,400; ninth, $1,300; tenth, $1,200; eleventh, $1,100; twelfth, $1,000.

The race will be for cars with 600 cubic inches piston displacement or less and a minimum weight of 2,000 pounds, making it a class E event. The speed requirement will be 75 miles an hour for one full lap of the 2 1-2-mile track. The field of starters will be limited to the thirty fastest cars to be selected in competitive trial if more than thirty entries are registered at the time of the race. In case of rain the A. A. A. has given permission for the race to be run on the following Saturday.

Oklahoma to Vote on Bonds

OKLAHOMA CITY, OKLA., Oct. 30—A bond issue of $1,250,000 for good roads in Oklahoma county will be voted on at a special election which has been called by the county commissioners. This election will be held November 23 and is called in response to a petition presented to the commissioners.

The petition contained 13,000 names and was the longest petition ever submitted in the history of Oklahoma county for any purpose. Oklahoma City is the county seat and pays more taxes than the rest of the county outside of the corporate limits but the petition was signed by town people with as much promptness as it was by farmers.

T. C. A. Party Starts from Atlanta

ATLANTA, GA., Oct. 30—Starting from this city to-day the path-finding party of the Touring Club of America commenced its journey to Richmond at 8 o'clock. The trip will cover Greensboro, Ga., Augusta, Columbia, S. C., Camden, Cheraw, Pinehurst, N. C., Raleigh, Henderson, Emporia, Va., and Richmond as night and noon stops, a distance of 695.3 miles. The party will arrive in Richmond November 3.

Those who compose the party are: W. J. Dabney, Richmond; Henry MacNair, New York; H. B. Varner, Lexington, N. C.; Lee A. Folger, Richmond; F. H. Elliott, New York; D. D. Armstrong, Atlanta, and W. D. Gordon, Richmond. All are prominent in the movement for good roads from a national aspect. Through the various States to be traversed the party will be escorted by highway commissioners and others who are making a close study of road construction and maintenance. A Chalmers six-cylinder car is being used as pilot in charge of Mr. MacNair, editor of the *Blue Book*.

Ready for Dash Across Desert

LOS ANGELES, Oct. 30—Sixteen tuned to the minute and desert-equipped motor cars will start on a 550-mile battle with the mountains and sand at 10.45 Saturday night. The start will be from the center of the Los Angeles business district and for 2 days and 1 night these machines and their crews will be covering the distance across the great American desert between Los Angeles and Phoenix in as fast time as can be made by a motor-propelled vehicle. Following is a list of the entrants:

Car.	Piston Dis.	Driver.
1—Maxwell	229	Clarence Smith
2—Pope-Hartford	299.4	W. D. Tremaine
3—Franklin	301.5	Ralph Hamlin
4—Stoddard-Dayton	550	E. Roger Stearns
5—Cadillac	286	W. W. Bramlette
6—E. M. F.	226.2	W. La Casse
7—Flanders	154.8	Geo. Soules
8—Cole	286	John Jenkins
9—Mercer	286	H. Hanshue
10—Case	236	W. F. Brong
11—National	442	Harvey Herrick
12—Buick	318	L. Nikrent
13—Fiat	618	Teddy Tetzlaff
14—Midland	318	F. Siefert
15—Lexington	280.6	C. Bigelow
16—Buick	318	J. Ferguson

Tire Makers Busy with Orders

AKRON, O., Oct. 30—The state of the automobile industry and the magnitude of plans being made for next year's business by automobile manufacturers, is reflected in the activity now apparent among Akron tire factories, all of which report that they are much busier now than is usual at this time of year. Akron tire makers are prepared for unprecedented production this winter, based on orders already booked or assured, due to the unusual campaigns mapped out by the manufacturers of medium priced cars.

The steadiness of the crude rubber market at a satisfactorily low rate has helped to ease conditions in the tire business. Since the breaking of the Brazilian and British corner in South American rubber, there have been few marked fluctuations in crude rubber quotations, and local manufacturers predict that for several years at least there can be no such soaring of rubber prices as were recorded a year and two years ago.

Six New Members of the A. B. of T.

The following new members have been elected to the Automobile Board of Trade: Warren Motor Car Company; James Cunningham Son and Company; Garford Company; Reliance Motor Truck Company; Rapid Motor Vehicle Company and the Marquette Motor Company. The latter organization is practically a consolidation of the Welch-Detroit and the Rainier.

NEWS of the WEEK CONDENSED

CHICAGO, ILL.—Many dealers and branch house managers attended a convention held at the plant of the Velie Motor Vehicle Company, Moline, Ill., October 20 and 21. Meetings were held at the assembly hall and talks on various subjects were given by men of the different departments: Chief Engineer C. B. Rose, General Manager Major L. M. Fuller, Sales Manager George H. Floyd and his assistant, Charles P. Hatter. A banquet was given on Friday evening in the Marble Hall at the Manufacturers' Hotel. Major L. M. Fuller acted as toastmaster. Immediately afterward the visitors were escorted in pleasure and commercial cars to the American Theatre, at Davenport, Ia.

AKRON, O.—The Jones Auto Company, of 53-55 South High street, has taken the agency for the 1912 Hudson.

WASHINGTON, D. C.—Earl & Allen, who are agents for the Hupp-Yeats electric, have secured the R. C. H. car.

WASHINGTON, D. C.—The Overland-Washington Motor Company has been appointed agent for the Garford in this city and the surrounding territory.

WASHINGTON, D. C.—M. T. Pollock, agent for the Oldsmobile, is making extensive improvements in his salesroom at 1018 Connecticut avenue, N. W.

BOSTON, MASS.—George H. Bammann, well known in Boston motor circles, has accepted a position with the Bi-Motor Equipment Company as a salesman.

WASHINGTON, D. C.—The Waverly Electric agency has been placed with the Luttrell Company, Dupont Circle and Connecticut avenue. This company also handles the Packard.

PHILADELPHIA.—A local branch of the Polack Tyre Company, manufacturer of solid rubber tires for commercial vehicles, has been established at No. 408 North Randolph street, with M. Smolens as manager.

PHILADELPHIA.—An eastern distributing agency for the Cutting car, of Jackson, Mich., has been established at No. 1431 Spring Garden street. Benjamin H. Kirkbride is manager for Pennsylvania, New Jersey and Delaware.

INDIANAPOLIS, IND.—The Rapid Motor Transit Company, of this city, began its motor bus service on November 1 with seven gasoline motor busses built by the White Company, of Cleveland, O. The cars are lighted and heated by electricity.

INDIANAPOLIS, IND.—R. L. Bartol has resigned as manager of the Ford sales branch in this city and has been succeeded by Dayton E. Keith, formerly with the Ford sales branch in Chicago. Mr. Bartol will conduct the Ford agency in Anderson, Ind.

SYRACUSE, N. Y.—The H. H. Franklin Manufacturing Company is now taking on mechanics to meet needs occasioned by increased production. Machine departments are working evenings, and several hundred skilled machinists will be put on during the coming weeks, it is reported.

TWO RIVERS, WIS.—Officials of one of the big aluminum manufacturing companies here deny reports that prices of raw and finished aluminum are slated for a decided drop. Although competition is growing stronger, the demand is increasing more than proportionately and no decline is looked for.

PHILADELPHIA.—Edwin H. Lewis, well known in local automobile circles and a prominent member of the Quaker City Motor Club, has become associated with the factory sales department of the Louis J. Bergdoll Motor Company, acting as traveling representative of the company.

COLUMBUS, O.—According to State registrar of automobiles Shearer Ohio is second among the States of the Union in automobile registration. In the report of licenses issued by the various States up to October 1, New York leads with over 80,000, Ohio is second with 45,421, and Pennsylvania is third with 43,074.

MILWAUKEE, WIS.—The Secretary of State of Wisconsin has announced that applications for 1912 registrations and licenses will not be received before December 15, instead of December 1, as previously stated. Annual registration went into force on September 1, 1911, in Wisconsin, and all cars will have to be registered by January 1.

BEVERLY, MASS.—The makers of the Cameron car at Beverly are arranging to enlarge their plant upon the receipt of more capital and offers have been made to them by another concern to consolidate. The company has just received word from abroad that in the closing race meet at Brooklands, Eng., the 70 miles an hour handicap was won by one of their 20-horse-

power cars from a field of 15 starters. It created much surprise, for the Cameron was not looked upon as having any chance to capture the event.

NEW YORK CITY—In the recent automobile exhibition at Berlin 82 manufacturers of automobiles exhibited. Of these 71, or 86.7 per cent., exhibited cars equipped with Bosch magnetos.

BALTIMORE, MD.—The Lambert Automobile Company is now located in its spacious new quarters at Maryland and Mount Royal avenues. The firm handles the Maxwell, National and Hudson cars.

PITTSBURG, PA.—The Pittsburg branch of the Franklin Automobile Company signed up two sub-dealers in this territory during the week: The Coraopolis Garage Company, of Coraopolis, Pa., and S. F. Carpenter, of Carbondale, Pa.

AKRON, O.—The B. F. Goodrich Company is opening three new Southern tire depots—at Nashville, Tenn., in charge of M. D. McKenzie; at Charleston, N. C., in charge of A. J. Kelley, and at Birmingham, Ala., in charge of L. F. Joliat.

TOLEDO, O.—The Rambler Sales Company has accepted the agency for the Detroit Electric in Toledo territory. This car was formerly handled by the Toledo Auto & Garage Company, which will now devote its entire time and attention to the housing of cars.

SYRACUSE, N. Y.—A. D. McLachlan has severed his connection with the Royal Tourist Motor Car Company, of Cleveland, O., and accepted the position of general sales manager for the Sanford-Herbert Company of this city, who manufacture a light delivery wagon.

TOLEDO, O.—The Gamble Motor Car Company, of Toledo, has taken over the agency of the Ohio Electric. An extended demand for this car is reported, several sales being closed during the past week with twenty-five deals in sight, which will be closed within the next few weeks.

TOLEDO, O.—Another car was this week added to the already long list handled on Motor Row, at Toledo, O. It is the Metz four-cylinder runabout, which sells at $495. The Northern Ohio Motor Car Company will handle the car in Toledo territory. A number of selling agencies will be established in Northern Ohio.

BOSTON, MASS.—Manager Frank J. Tyler, of the United States Motors Company's Boston branch, has decided to have the Stoddard-Dayton branch moved into the building on Massachusetts avenue at the corner of Newbury street, where the Maxwell, Brush, Sampson and Columbia are handled, so that all will be together.

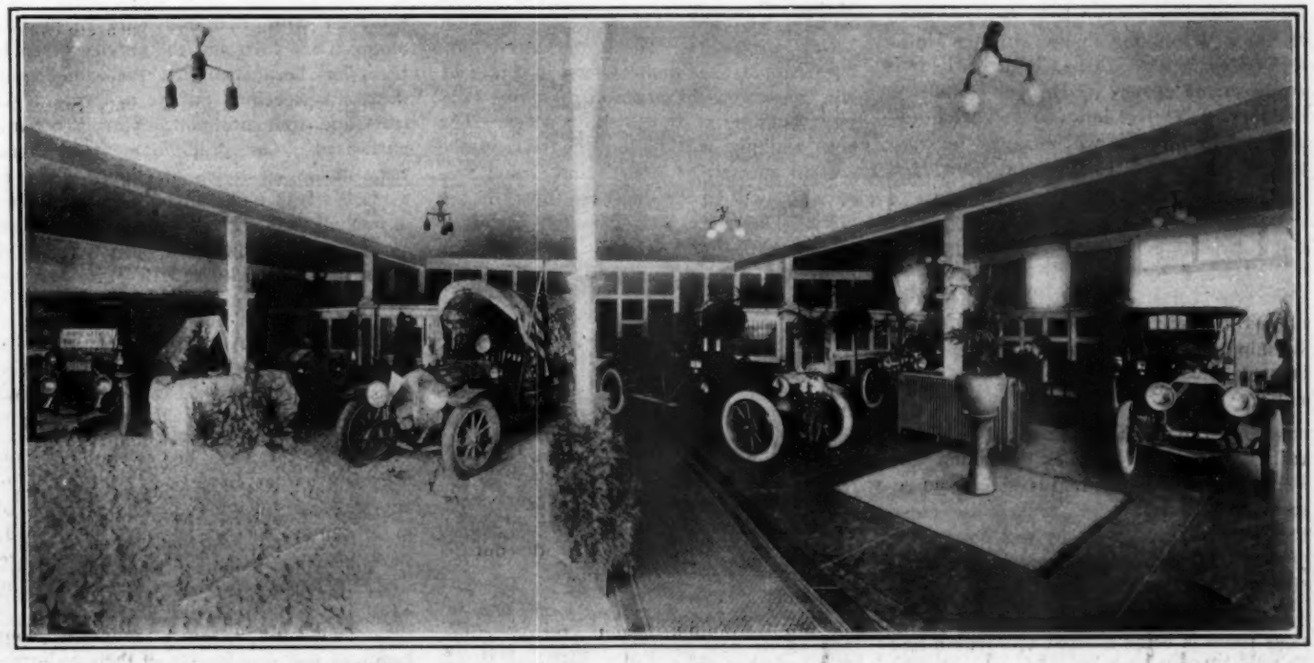
SYRACUSE, N. Y.—Automobile exhibits exercised commanding interest at the first annual exhibition, under the auspices of the United Commercial Travelers, of the Industrial Exposition and Pure Food Show at the Syracuse Armory this week. Local agents declared after the show that it had brought them a round total of $60,000.

AKRON, O.—The factory of the Goodyear Tire & Rubber Company has shut down for purposes of inventory and rearrangement to meet the demands of increasing business. During the shut-down a transfer was accomplished from steam to electric power for driving machinery, a fine electric power plant having been installed.

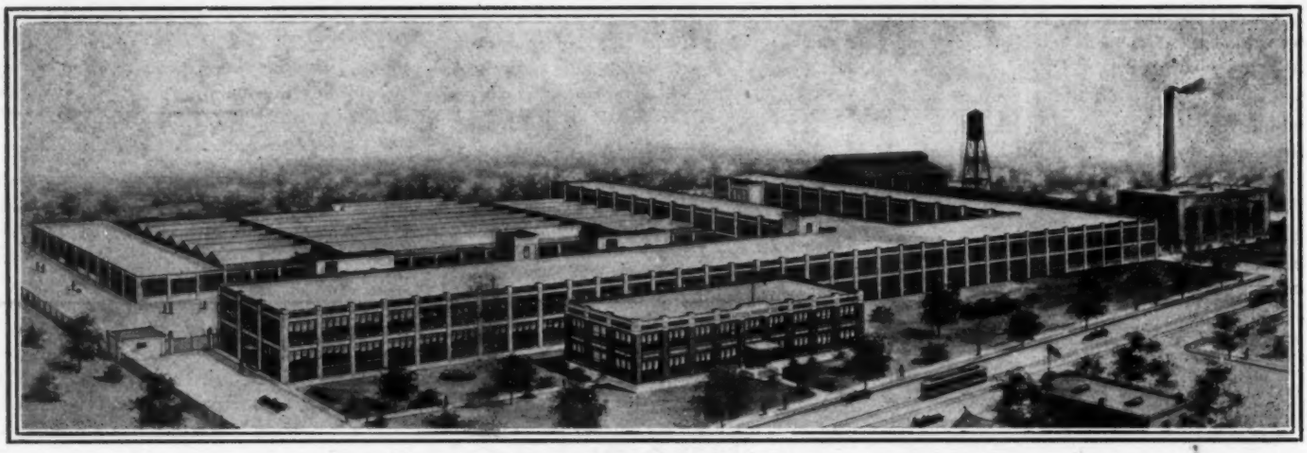
BOSTON, MASS.—On October 31 the Boston Y. M. C. A. officially opened the finest and best equipped automobile school in America, if not in the world. It is a fireproof building, three stories high, sixty feet wide and nearly two hundred feet long. It contains lecture rooms, laboratories, machine shop, garage, and every feature for the handling of the automobile with the exception of the manufacture of new cars.

NEW YORK CITY.—The Abbott-Detroit Motor Company, of New York, reports a big Fall agency business. Within the last two weeks they have signed up contracts, ranging from 50 to 250 cars each, with thirty agents, among whom are the following: Co-Operative Motor Car Company, Buffalo, N. Y.; Central Auto Sales Company, Utica, N. Y.; Abbott-Detroit Sales Company, Rochester and Syracuse, N. Y.; Ryder Motor Car Company, Poughkeepsie, N. Y.; F. W. Smith, New Haven, Conn.; Binghamton Ford Sales Company, Binghamton, N. Y.; William Stevenson Garage Company, Morristown, N. J.

INDIANAPOLIS, IND.—The fall automobile show held recently by the Premier Sales Company of this city at its sales rooms was an unqualified success, and will be made an annual event in the future. Hundreds of visitors attended the show daily and much interest was manifested. Many persons pronounced the exhibit the most striking they had ever seen. The idea of the desert scene, which occupied half the space, was taken from the Ocean-to-Ocean Tour of twelve Premier cars last summer, when the forty tourists camped out in the desert while en route from the Atlantic to the Pacific Coast. Sand, cactus and sage brush were used, surrounding the tents of the campers and two of their cars, the pilot and prairie schooner. The rest of the space was taken up with Series M models.



Fall exhibit of the Premier Indianapolis branch. On the left is reproduced some of the desert conditions encountered on the Ocean-to-Ocean tour



Bird's-eye view of the principal plant of the Lozier Motor Company at Detroit, Mich., employing eleven hundred men

DETROIT, MICH.—W. Edward Wilson, of the Wilson Body Company, died suddenly at his home here, from heart disease. He was 38 years old and was one of the most popular men in local motor circles.

DETROIT, MICH.—The Continental Motor Manufacturing Company has begun work on an addition to its Muskegon plant. The extra room is greatly needed. The plant is now running full capacity, night and day.

DES MOINES, IA.—The Brown-Corley-Ellis Company, local agent for the Marmon, Paige-Detroit and Kelley trucks, has started the erection of a two-story building at Fourth and Grand avenues which is to be completed in sixty days.

DES MOINES, IA.—George Means, a well-known Des Moines automobile dealer, was married this week to Mrs. Genevieve Tucker-Evans, of this city. A motor trip to Kansas City was the honeymoon for the newly married auto man and his bride.

DETROIT, MICH.—Work is being rushed on the new addition to the Hudson Motor Car Company's plant in an effort to have it ready for occupancy by Dec. 15. The new building is 530 feet long, 60 feet wide and two stories high. It will increase the company's floor space to 236,411 square feet.

DETROIT, MICH.—Walter E. Blaine, a draughtsman for the Packard Motor Car Company, has been declared the winner of the Flanders 20 offered by the Board of Commerce for suggesting the most suitable name for the water carnival to be held next Summer. It will be known as the Cadillaqua.

DETROIT, MICH.—The Chalmers technical convention, which was continued last week with 28 technical men from the Middle West and South in attendance, is proving so popular that the company has decided to add a fourth week to the convention program. Accordingly the sessions will not end until the week of Nov. 6.

OMAHA, NEB.—A two-story garage and sales room is being erected at Fortieth and Farnam streets for the Electric Garage Company. This is the first garage to be built in the residence district, being in one of the most fashionable districts in the city. Practically all of the garages are between Sixteenth and Twenty-fourth streets, on Farnam.

DETROIT, MICH.—William B. Wreford, formerly well known in local motor car circles, has been promoted to the position of assistant secretary of the Detroit Board of Commerce. Mr. Wreford left the automobile business several months ago to become municipal secretary of the board and in that capacity he has rendered most efficient service.

DES MOINES, IA.—The United Motors Des Moines Company, which is the State agency for the United States Motors Company, will move this week to the quarters formerly occupied by the state agency for the Buick Company. The Buick State agency has been closed. George W. Jones is the manager of the United Motors Des Moines Company.

DES MOINES, IA.—The Iowa Auto & Supply Company, the pioneer firm in this field, has announced the erection of a fine two-story building to house the concern. The new building will be on the site of the present quarters at Fourth and Grand avenues and will be the finest repository in the State. The Iowa Auto & Supply Company was recently merged with the Keystone Auto and Supply Company.

PERU, IND.—The Great Western Automobile Company of this place has brought out a new automobile body with detachable fore doors which, when removed, leave the car as a finished open touring car with no disfiguring posts nor mouldings. The compartment under the rear seat can be reached through a door at the rear of the body as well as by lifting the seat cushion. This obviates the annoyance of disturbing the occupants of the seat.

DETROIT, MICH.—The Hupp Motor Car Company has appointed Charles D. Hastings as its new general manager and the directors are satisfied that they have made a very happy selection. Mr. Hastings is given a large share of the credit for the successful development of the sales organization and his suggestions have resulted in many economies in the manufacturing end of the business. For several years before he became identified with the Hupp Company Mr. Hastings was with the Olds Motor Works.

INDIANAPOLIS, IND.—Mr. Carter, president of the Henderson Motor Sales Company, accompanied by Charles P. Henderson, general manager of the same company, Mrs. Carter, Mrs. Henderson and Miss Henderson has returned to this city after a six weeks' trip through Minneapolis, Winnipeg, Vancouver, Seattle, Portland, San Francisco and Los Angeles. Their object was pleasure, but Mr. Henderson turned part of his trip into business. Stops were made at scenic points on the Canadian-Pacific.

AKRON, O.—The first seven trucks owned by the Chicago Fire Department came equipped with Diamond wire mesh base motor truck tires and the service given by them has been such that the same equipment was specified on the nine police patrols and four fire police patrols recently purchased. On preliminary tests these must make 45 miles an hour, while an average of 35 miles an hour is maintained in making runs. The average mileage given by the tires to date has been over 15,000 miles on fire trucks and over 10,000 miles on police trucks.

DETROIT, MICH.—Frank Briscoe, who has been at the head of the Detroit division of the United States Motor Company since the corporation was organized, has gone to New York to take full charge of the company's engineering work. This necessitated his resignation as president of the Briscoe Manufacturing Company and the Brush Runabout Company and as treasurer of the Alden-Sampson Company. Hereafter the plants will be operated as units. Mr. Briscoe left for New York last Tuesday. His office will be at 3 West 61st street.

Los Angeles, Cal.—Manager Charles Cotton, of the Los Angeles Motor Car Company, Southern California, representative of the Locomobile, announced last week the removal of the Locomobile headquarters from Rice and Hill streets to spacious quarters at Eleventh and Flower streets.

Detroit, Mich.—As a part of the improvements being made at the Ford plant a complete new heating and ventilating system is being installed by the Coon-De-Visser Company. It will supply the present plant as well as the large addition that is being built, washing, heating and circulating about 750,000 cubic feet of air per minute.

Portland, Ore.—Rambling through the State of Oregon in an automobile was the way in which Mr. and Mrs. J. L. S. Snead, of the Krit Motor Sales Company, of this city, spent their honeymoon. They packed a camping outfit and provisions on their little two-passenger car and spent nearly two weeks out of doors. In this time the state was traversed from end to end and the trip cost less than $60.

Claremont, Cal.—The local speed limit has been raised from twelve to fifteen and twenty miles on hour. This was received by the Southern California motorists with joy, as the college town has been avoided of late because of the drastic measures said to have been taken against autoists who exceeded the speed limit. The raising of the limit is due to the efforts of the officials of the Automobile Club of Southern California who have been working for months with the Claremont officials.

San Francisco, Cal.—The Olds Motor Works has incorporated a branch house here under the title of the Oldsmobile Company of California. W. J. Mead, vice-president and general manager of the Olds Motor Works, has been named as president of the California branch. John H. Hagal, one of the best known automobile men on the Pacific Coast, is vice-president; R. N. Mosher, treasurer; F. E. Stewart, secretary and assistant treasurer, and D. L. Whitford, director. All five constitute the officers and board of directors of the new company.

New York City.—The Mitchell Motor Company of New York opens to-day its extensive new salesrooms at the corner of Broadway and 61st street. The space occupied by the company in its new location is much in excess of the area covered by the old sales quarters. At the same time the new service department, at 519 West 55th street, is placed at the disposal of Mitchell owners. This is a six-story building and will be entirely devoted to service purposes, specifically so far as the Mitchell products are concerned. The total area of all the floors of the building is little short of 30,000 sq. ft.

El Paso, Texas.—The Southwest Auto Company, 407 and 408 Caples Building, has embarked in business there with a capitalization of $100,000 as general sales agents for automobile manufacturers. The original incorporators are L. S. Davis, Geo. I. Waddey, T. A. Frey and L. A. Brasher.

Automobile Incorporations

AUTOMOBILES AND PARTS

Buffalo, N. Y.—Whyland-Nelson Motor Car Co.; capital, $10,000; to manufacture engines and automobiles. Incorporators: Frank A. Shoemaker, Frank W. Whyland, Joel W. Nelson.

Cincinnati, Ohio—Muhle Motor Co.; capital, $20,000; to do a general automobile business. Incorporators: Henry M. N. Muhle, John C. Miller, Ida Muhle, Mary Smith, Elizabeth Muhle.

Cincinnati, Ohio—Spring Hub Automobile Wheel Co.; capital, $10,000; to manufacture wheels for motor cars. Incorporators: James G. Blackburn, Ino H. Kruse, James T. Earle, Harry H. Weihe, Harry W. Plum, Robert Freisens, Edgar Wooley.

Columbia, S. C.—Etheredge Motor Co.; capital, $10,000; to sell automobiles. Incorporators: C. L. Etheredge, Robert L. Mitchell, E. J. Etheredge.

Decatur, Ind.—Decatur Motor Car Co. has increased capital from $250,000 to $350,000.

Grand Rapids, Mich.—Michigan Auto Joint Co.; capital, $10,000; to manufacture automobile parts, especially universal joints. Incorporators: C. E. Perkins, F. Carter.

Lansing, Mich.—Little Motor Car Co.; capital, $1,200,000; to manufacture automobiles. Incorporators: S. W. H. Little, C. M. Begole, W. S. Ballenger, W. C. Durant.

Louisville, Ky.—Clark Motor Car Co.; manufacturer of automobiles, increased capital from $30,000 to $60,000.

New York City—Bayles Sales Co.; capital, $10,000; to make and sell automobiles. Incorporators: Harry T. Bayles, Halsey K. Smith, Ansela P. Andersonn.

New York City—International Motor Service Association—to manufacture automobiles. Incorporators: W. H. Brearley, W. W. Friend, I. A. Monsees.

Norfolk, Va.—Mitchell Agency; capital, $10,000; to sell automobiles. Incorporators: H. T. Richardson, S. H. Butt, V. Butt.

Ocala, Fla.—Florida Automobile & Sales Co.; capital, $25,000; to sell automobiles. Incorporator: B. R. Hinson.

Portsmouth, Va.—Mitchell Agency; capital, $10,000; to sell automobiles. Incorporators: H. T. Richardson, S. H. Butt, V. Butt.

Portsmouth, Ohio—Portsmouth Automobile & Machine Co.; capital, $10,000; to make and sell automobiles. Incorporators: Lincoln Pool and others.

St. Charles, Mo.—Boenker Motor Plow Mfg. Co.; capital, $24,000; to make motor plows. Incorporators: H. H. Boenker, Louis Ringe, L. G. Wilbrand.

St. Paris, Ohio—Brockshire & Robinson Co.; capital, $20,000; to manufacture automobiles. Incorporators: F. M. Brockshire, W. T. Robinson, John Schooler, H. L. Pentz, H. C. Brockshire.

White Plains, N. Y.—William Marshall, Inc.; capital, $20,000; to make automobiles. Incorporators: William Marshall, Marguerite Young, John Hamilton.

AUTOMOBILE GARAGES AND ACCESSORIES

Cincinnati, Ohio—Ohib Top Co.; capital, $25,000; to manufacture and sell tops for automobiles. Incorporators: Robert F. Kroger, William Bossemeyer, Bion Place, Amanda Bossemeyer, Louise H. Bossemeyer.

Cleveland, Ohio—Burke Valve Co.; capital, $50,000; to manufacture tire valves.

Fivepoints, Ala.—Highland Garage; capital increased from $5,000 to $25,000; to do a general garage business. Incorporators: L. E. Whitehead, F. E. Whitehead.

Fremont, Ohio—Northern Ohio Punctureless Tire Co.; capital, $3,000; to make a patented tire. Incorporators: Frank E. Nieset, Lewis Nieset, John J. Nieset, L. P. Nieset, C. N. Brown.

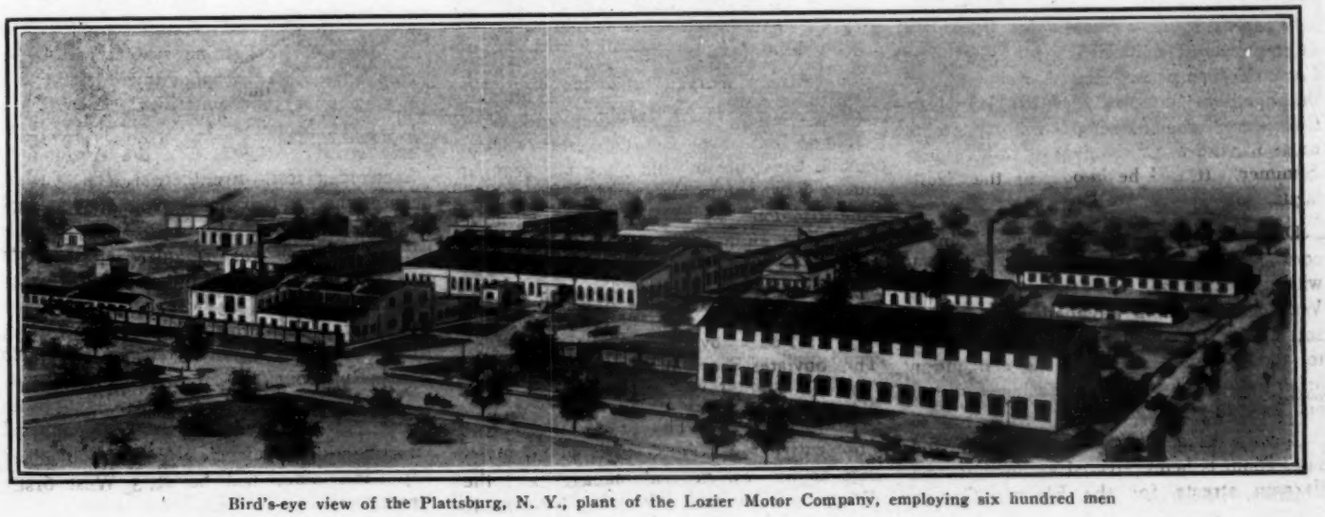
Hagerstown, Md.—Antietam Garage Co.; capital, $5,000; to do a general garage business.

New York City—La France Motor Car Co., changed name to La France Garage Co.

New York City—Auto Sectional Leather Tire Co.; capital, $50,000. Incorporators: Herman L. Biener, Isidore Scherer, Moses Scherer.

New York City—United Automobile Owners' Protective Association; capital, $25,000; to inspect automobiles and conduct a chauffeurs' agency. Incorporators: H. E. Tibid, H. A. Trebing, A. J. Davenport.

Philadelphia, Pa.—Eareckson, Hofacker & Fleming; to conduct a general garage business.



Bird's-eye view of the Plattsburg, N. Y., plant of the Lozier Motor Company, employing six hundred men

OF INTEREST to the INDUSTRY

White 1½-ton army escort wagon, built for the Government

CLEVELAND, O.—The White Company has just delivered to the Government of the United States an army escort wagon which shows a most interesting development of the motor vehicle for freight transportation in connection with military work. The wagon was built according to Government specifications, and if found successful will in all probability be used in considerable numbers by the military service. The regular 1½-ton White chassis has been used in the building of this wagon.

FREMONT, O.—Harry Bowlus, formerly of the Gramm Motor Car Company, of Lima, O., has accepted the position of superintendent of the factory of the Lauth-Juergens Motor Car Company of this place.

COLUMBUS, O.—The Eagle Motor Car Company of this city, which has been manufacturing the Eagle Roadster, has changed its name to the Union Sales Company and the name of its car to the Union 25.

MILWAUKEE, WIS.—The Beaver Manufacturing Company, which is owned and controlled by the Filer & Stowell Company, is now operating under full schedule its new modern plant covering more than 120,000 feet of floor space.

DAYTON, O.—N. H. Anderson, chief engineer of the Speedwell Motor Car Company, Dayton, O., has tendered his resignation, to take effect Dec. 1, 1911, and intends to give his entire time to his new process of rolling the teeth in steel gear blanks while hot.

OSHKOSH, WIS.—H. C. Doman has disposed of his interest in the H. C. Doman Company, manufacturing motors and engines, and will retire. The new owners of his interest are Philip H. Sawyer and Edgar P. Sawyer, well-known manufacturers of Oshkosh.

HARTFORD, WIS.—The new factory building of the Kissel Motor Car Company, in which most of the assembling will be done, will be ready for occupancy about Dec. 1. The factory is working to full capacity and the additional room is much needed to enable the concern to keep up to its 1912 schedule.

NEWCASTLE, IND.—A reorganization of the Whitesides Commercial Car Company, which is moving from Franklin, Ind., to Newcastle, Ind., has taken place, the new company being incorporated with an authorized capitalization of $31,250. The directors are L. C. Boyd, F. N. Whitesides, O. C. Saffell, T. B. Milliken and W. G. Hillock.

COLUMBUS, O.—Attorney-General Hogan, of Ohio, has rendered an opinion recently which is of interest to firms and corporations acting as agents for motor cars in the Buckeye State. It is held that when a partnership changes its name it is not entitled to the use of the old registration and number plates, but must register anew and secure different number plates.

NEWARK, N. Y.—A peremptory sale of the entire Mora Automobile plant, including sixty cars, machinery and building plant will be held Tuesday, Nov. 14, and Wednesday, Nov. 15, 1911. Bidders will be offered an opportunity of purchasing single cars. Arrangements will be made with the purchasers of the patterns to supply the owners of the Mora cars with any part desired.

DETROIT, MICH.—The differences and litigation that have existed for several years between the Timken Companies and Lindsay & Harmon, of Indianapolis, regarding the Lindsay patents on rear axle constructions, under which the Timken Companies have been operating, have been amicably settled and adjusted, and the Timken-Detroit Axle Company retains complete shop rights under these patents.

RICHMOND, VA.—Ground has been broken for the automobile factory which the Kline Motor Car Company is to erect in Richmond. The site is on the boulevard near the Fair Grounds, and the contract calls for a complete structure by Feb. 1, 1912. The plant will cost about $300,000 and will give employment to about 1,000 men when in full operation. It is said that orders have already been received for cars valued at $800,000 though no deliveries can be made until next year.

MILWAUKEE, WIS.—The Lavigne Gear Company, of Detroit, Mich., has decided to move to Wisconsin and the equipment and machinery are now being installed in buildings of the Wisconsin Engine Company at Corliss, Wis., 25 miles south of Milwaukee. The company has been incorporated under the laws of Wisconsin with an authorized capitalization of $100,000 by Charles E. Albright, George Uihlein and Norman L. Baker, of Milwaukee. The concern manufactures gears for motor vehicles and as a specialty makes a gear which is a substitute for the worm gear.

LAFAYETTE, IND.—The Esterline Company, Lafayette, nd., manufacturer of the Berdon electric lighting system for motor cars, announces the appointment of the following sales representatives: New York City, Mr. Mortimer L. Newman, 114 Liberty street; Atlanta, Ga., the Automobile Specialties Company, Mr. L. O. Surles, manager, 222-224 Peachtree street; Denver, Col., Western Engineering & Specialties Company, 1732 Glenarm street; San Francisco, Cal., the Symonds-Berle-Kirkpatrick Company; Los Angeles, Cal., the Symonds-Berle-Kirkpatrick Company; Cleveland, O., Chas. F. Saenger & Co., 210 Electric Building; Boston, Mass., the Standard Engineering Company, 53 State street; New Haven, Conn., the Standard Engineering Company, 810½ Chapel street; Waterbury, Conn., the Standard Engineering Company, 16 East Main street.

PATENTS GONE TO ISSUE

DIFFERENTIAL GEARING—Axles are rotated by gears in mesh with idlers on stud in differential housing.

1. The patent relates to a balancing gear, Fig. 1, consisting of a housing member, a primary driving gear and a casing member, the driving member being detachably secured to the housing and casing members. The housing member carries a stud, the length of which is equal to the housing diameter, and idlers are carried on the stud. The axle sections entering the gear casing and abutting the stud carry secondary driving gears, which have motion imparted to them by the idlers on the stud. The ends of the stud are held to the housing member by means of cap screws.

No. 1,006,847—To James G. Heaslet, Detroit, Mich., assignor of one-half to Walter E. Flanders, Pontiac, Mich. Granted October 24, 1911; filed July 27, 1910.

HYDROCARBON POWER PLANT—A system consisting of a number of combustion chambers and a working gas turbine.

3. The plant shown in Fig. 2 is a combination of a shaft with a system of internal combustion motors symmetrically surrounding the shaft on which is mounted, besides the motor cylinders, a working turbine. Between motor system and turbine is mounted a collecting chamber connected by passages to the motor plant. Means are provided to prevent the escape of heat from the chamber and nozzles are in the chamber directing the flow of gases from there to the turbine. A compressor turbine has its running wheel mounted on the shaft and a suction pipe leading to it. A delivery pipe connects compressor and motor system and it contains a cooling device. An annular compression chamber communicating with the delivery pipe and with the working cylinders is provided.

No. 1,006,907—To Alfred Buechi, Winterthur, Switzerland. Granted October 24, 1911; filed October 30, 1906.

SPEED-CHANGING MECHANISM—A system of regulating the gears serving for speed changing in an automobile.

5. Fig. 3 illustrated the combination, with the operating members of a speed-changing gear, of a gate-plate having one transverse slot and a plurality of longitudinal slots connected with the transverse slot mentioned, a plurality of super-imposed sliding plates movable parallel to the gate-plate and having apertures whose rear walls in the rearmost position of the plates register with the rear wall of the transverse slot of the gate-plate. Means are provided for guiding the sliding plates. A lever pivotally mounted to move in the slots of the gate-plate extends permanently through the apertures of the sliding plates, projections in these apertures corresponding relatively in position with the longitudinal slots in the gate-plate. Means are provided to connect the sliding plates with the operating members of the change-speed gear. A pedal is connected to the above-mentioned lever which has a projection. An independently pivoted cam-lever is adapted to engage the projection and to the cam lever is connected a pedal. A clutch and a brake rod are connected to the cam lever.

No. 1,006,893—To Arthur Henry Adams, London, and Marcus Charles Inman Hunter, Bedford, England, assignors to Adams Manufacturing Company, Ltd., London, England. Granted October 24, 1911; filed July 15, 1910.

TENDER FOR TRACTION ENGINES.—Attachment for agricultural and similar machines for carrying fuel.

3. The tender comprises a body carrying a water tank and vertically hanging bearing sleeves. To each sleeve a wheel is pivotally connected, and between the sleeves a fuel rack is seated on the body and held in place by the sleeves.

No. 1,006,764—to Charles F. Maloney, Wheelock, N. D. Granted October 24, 1911; filed June 20, 1910.

CARBIDE INDICATOR—An indicator showing the quantity by weight of the carbide contained in the holder of an acetylene generator.

1. The patent is of an acetylene generator with a carbide holder having a tapering lower portion, around which loosely extends an annular plate supported by springs which are mounted in stationary members. Means actuated by the movement of the carbide holder are movable along a scale with weight graduations, indicating the weight of carbide in the holder.

No. 1,006,826—to Harry C. Buschmann, assignor to Jenne Acetylene Gas Machine Company, Indianapolis, Ind. Granted October 24, 1911; filed March 23, 1911.

AUTOMATIC CONTROLLER—Circuit controller for electric motors.

2. The patent covers, in a governor, the combination with a rotating shaft, of a pair of pivoted weights surrounding the shaft and having their greatest weights at their ends, and a longtitudinally movable member provided with a pair of teeth at the sides of the shaft and midway between the weights which engage the teeth.

No. 1,006,802—to Simon Sparrow, assignor to Wagner Electric Manufacturing Company, St. Louis, Mo. Granted October 24, 1911; filed May 27, 1909.

VALVE CAGE—A type providing a tight fit for oscillating valves.

2. The patent relates to a cylinder adapted to receive a valve cage fitting tightly in the cylinder, and having ports separated by a bridge and a groove extending longitudinally from end to end of the cage and formed in the exterior surface of the bridge where the same makes contact with the cylinder bore.

No. 1,006,748—to Thomas Hall, assignor to Ridgway Dynamo and Engine Company, Ridgway, Pa. Granted October 24, 1911; filed February 11, 1911.

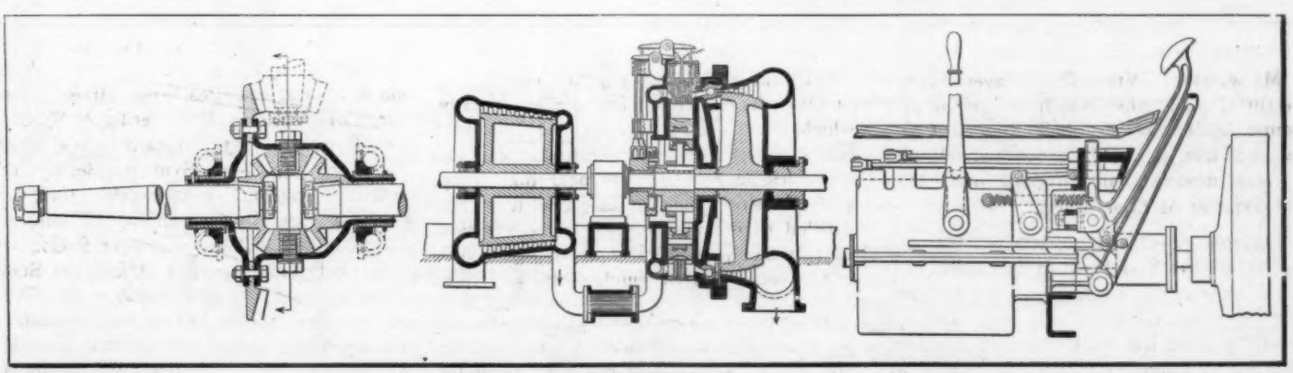


Fig. 1—Heaslet Flanders differential. Fig. 2—Buechi hydrocarbon motor plant. Fig. 3—Adams-Hunter speed-change mechanism

Newest Ideas Among the Accessories

Disco Self-Starter

THE Disco, illustrated in Figs. 1 to 5, is made by the Ignition Starter Company, of Detroit, Mich. Its principle of operation is the injection of compressed acetylene into the engine cylinders and starting on the spark by means of this highly combustible fuel. The entire installation may be understood by referring to Fig. 1. When the Disco self-starter is installed the priming cups in the motor cylinders are replaced by so-called engine valves, Fig. 2. These valves consist of a lengthened priming cup and cock, and a connection is provided on the stem, through which acetylene may be led into the valve and cylinder. The acetylene is taken from the gas tank, flowing through a gas pipe to the distributor on the dashboard, whence it is distributed to the four engine valves. Turning the handle of the distributor, Fig. 3, permits the acetylene to pass through the distributor valve contained in this part of the system (Fig. 5).

The Disco principle is said to operate on any engine which stops or balances in a normal position, i.e., in one where a spark occurs in one cylinder, if the battery circuit is closed. It is necessary, of course, that the spark be strong enough to explode the mixture, in other words, that the ignition system be in good order.

Since the same acetylene tank supplies the gas to the starter and to the headlights and lamps, provision must be made to operate these two systems independently. This is done by using a two-way gas-tank connection, Fig. 4, by which half of the gas is directed to the lighting and the other half, if necessary, to the starting system. The two-way connection is so threaded as to be capable of replacing the standard connection on the acetylene tank.

It must be understood that in conducting the gas to the distributor and engine valves rubber tubing or some other piping except copper must be used. Although very little acetylene is consumed through the Disco system—it is said that it starts an engine 3,000 times on the contents of one tank—the influence of the gas would in time change the copper gaspipes to acetylene-copper on the inside. This is a very dangerous material to handle, as the slightest concussion might bring about an explosion.

The fact that the acetylene tank and the ordinary ignition system are used in the Disco starting system goes to make it fairly foolproof, since everybody is nowadays familiar with the caution necessary in handling these two accessories of the automobile.

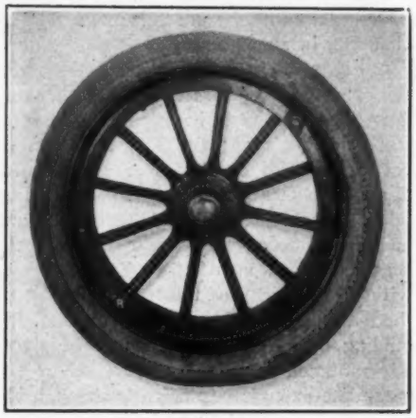


Fig. 6—Lambert demountable rim which is controlled by a single bolt

Lambert Demountable Rim

The Lambert rim, which is illustrated in Fig. 6, is of the quick-demountable class. The side of wheel seen in Fig. 6 is the outside one, on which all the operations are done, and it is very simple in appearance, showing but one ratchet R and pawl, and an adjustment nut A for the purpose indicated. To take the rim off the wheel, the ratchet is turned by a special wrench having a handle of the rotary drill type. About fourteen revolutions of the nut release the bolt integral with it from its seat, and as soon as this is done the tire rim and tire are forced off their seat on the felloe rim. This is caused by the peculiar shape of the latter, which converges toward the center line of the chassis. If the tire rim and tire are put in place the action of the bolt and the nut on the wheel felloe bring felloe and tire rim into tight relation, overcoming thereby the tendency of the wedges on the tire rim, which also tend to throw felloe rim and tire rim out of engagement. The adjustment nut A is very seldom used, as it serves only to take up wear.

After the tire rim has been removed from the wheel a slight shock produced by springing it on the ground permits of taking the rim out of the tire shoe. The rim is made in two steel sections, hinged at one end and engaging in a positive-lock manner on the other. The slight shock imparted to the tire disengages the locking portions and the hinged rim sections are easily pulled away from the tire and fitted to a new tire or the old shoe after a new tube has been placed into it. Hereafter the rim and new tire are bolted onto the wheel again. The bolt, which is integral with the ratchet, is the only loose part of the Lambert demountable rim. The pawl holds the ratchet in whatever position it is brought into by means of the wrench, but if the wrench is slipped over the nut attached to the bolt the pawl is pressed out of engagement with the ratchet, so that the latter may be rotated without difficulty. The handle of the wrench is of such size as to give considerable leverage and consequent ease of operation in screwing the rim on or off.

The Lambert rim is the product of the American Rim Company, of 250 West 54th street, New York City.

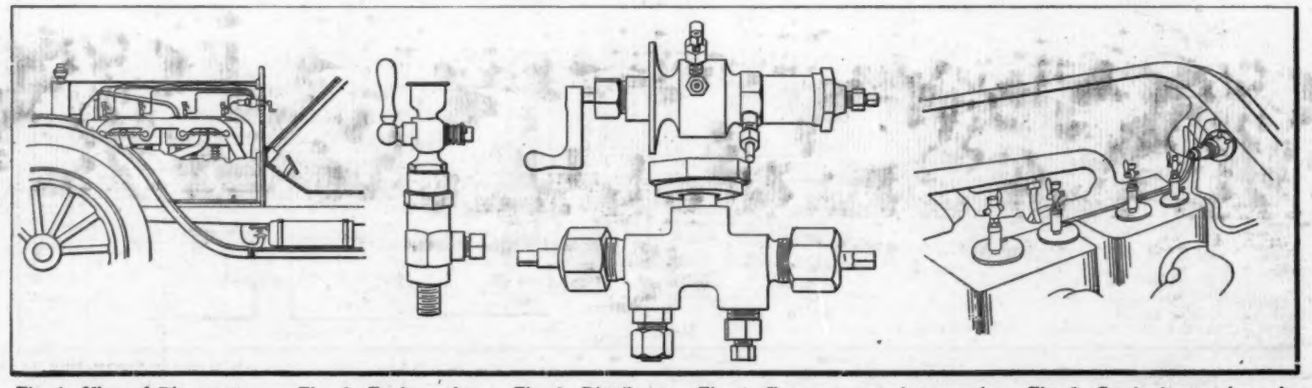


Fig. 1—View of Disco system. Fig. 2—Engine valve. Fig. 3—Distributor. Fig. 4—Two-way gas-tank connection. Fig. 5—Gas lead to engine valves